For producers of Sand, Gravel, Crushed Stone, Slag, Cement, Lime, Gypsum, and other nonmetallic minerals

APRIL 1958

PIT and QUARRY

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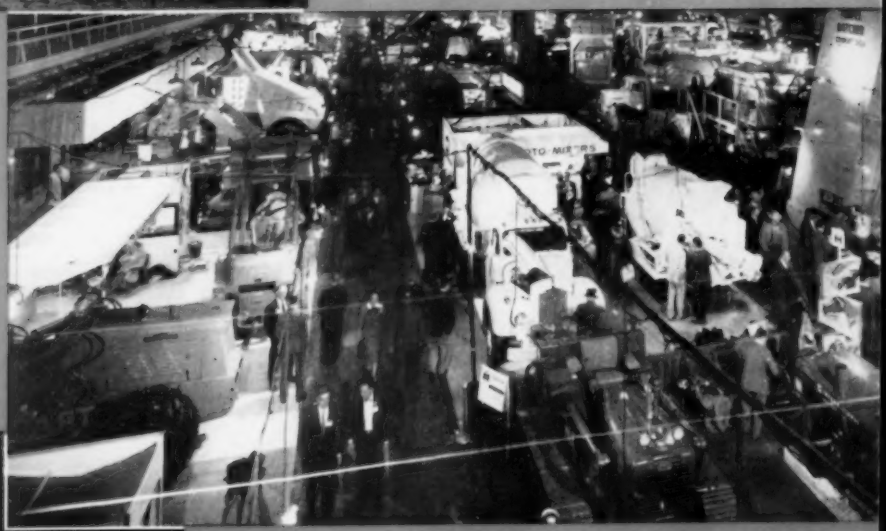

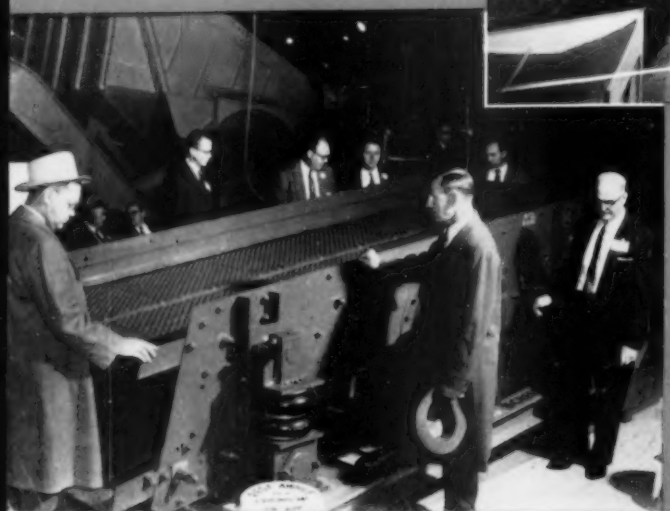

COMPLETE REPORTS on Aggregates Conventions

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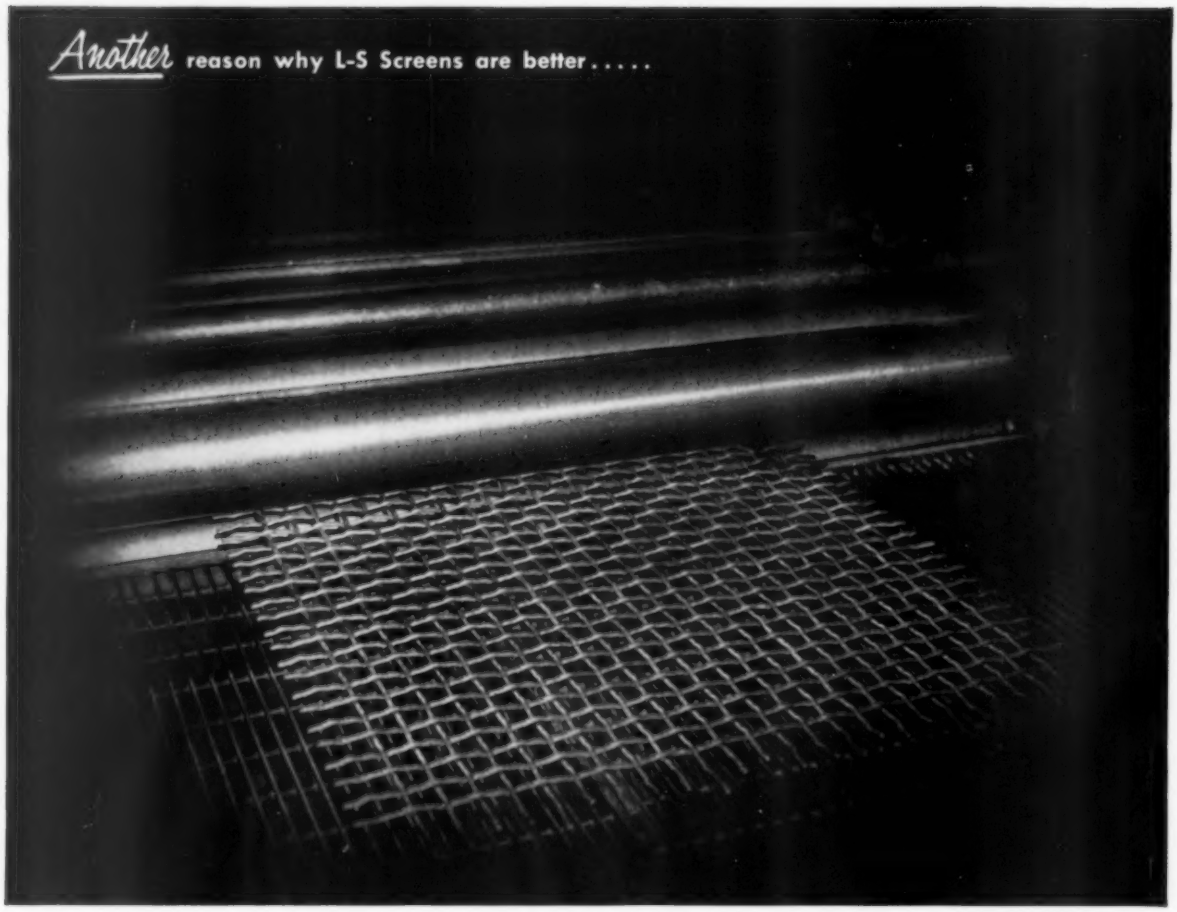
Durable answer to you w



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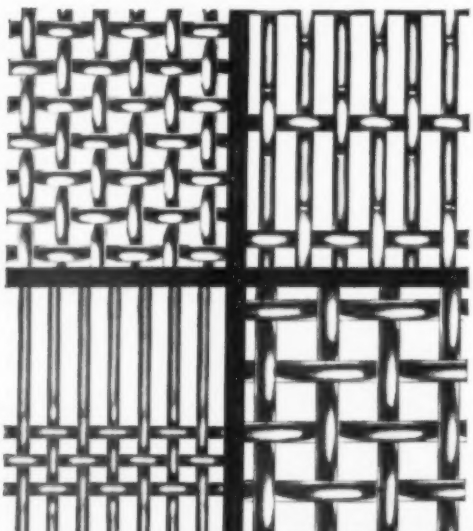

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pit and quarry

THE BASIC MAGAZINE IN A BASIC INDUSTRY

APRIL 1958 Vol. 50 No. 10

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Cover Picture

• On our front cover are three photographs taken at conventions held recently in Chicago, which are fully reported in this issue of PIT AND QUARRY. At the top, left, are representatives of the record number of companies which were winners in the safety contest of the National Crushed Stone Association. At the right is a general view of a small part of the Coliseum exhibits of the National Sand and Gravel Association and the National Ready Mixed Concrete Association. In the picture at the left, below, is a group of aggregates producers examining equipment at one of the many attractive and interesting exhibits.

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel, Slag and other nonmetallic minerals.

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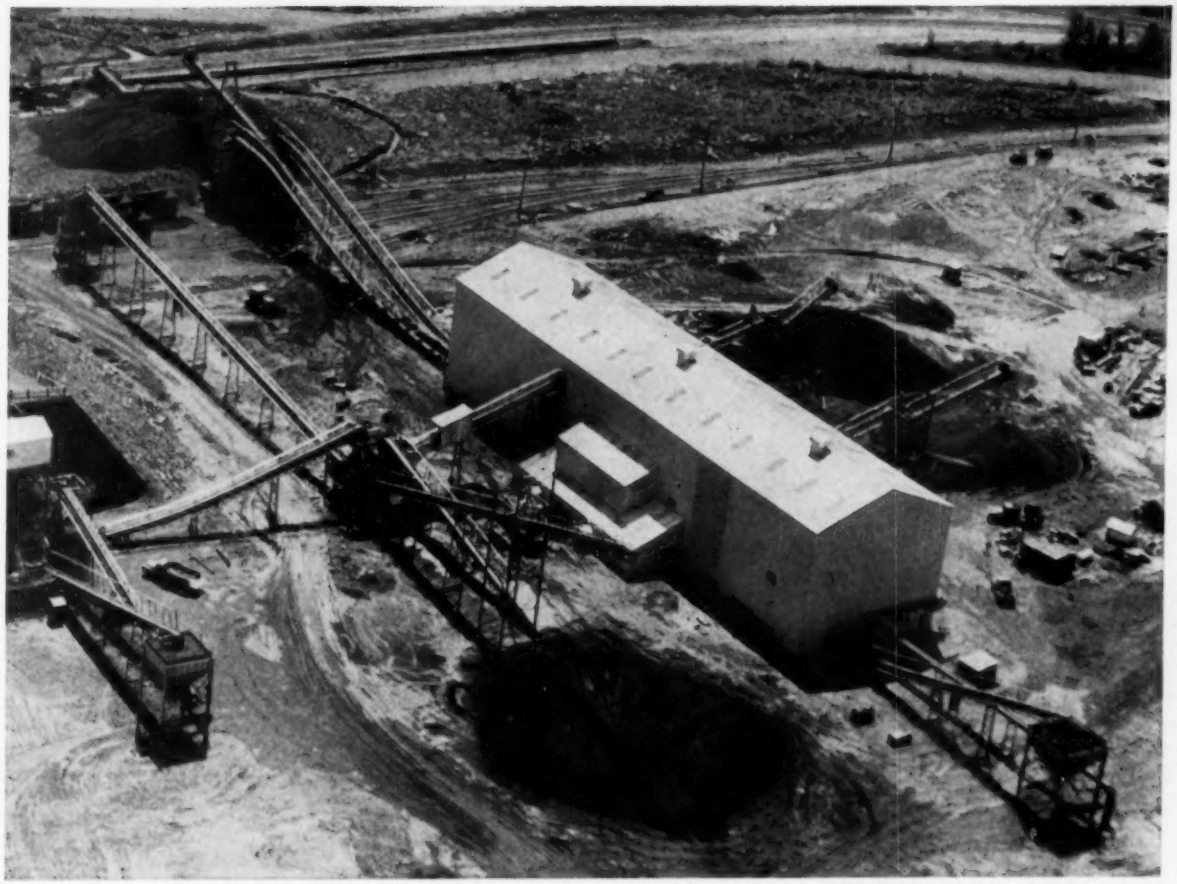
PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX



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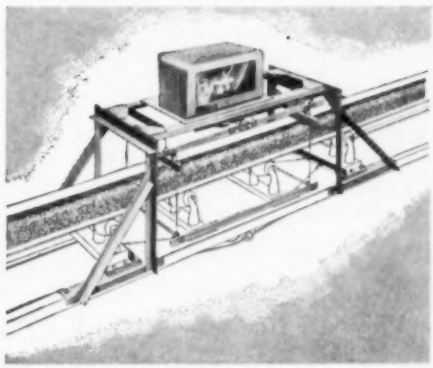

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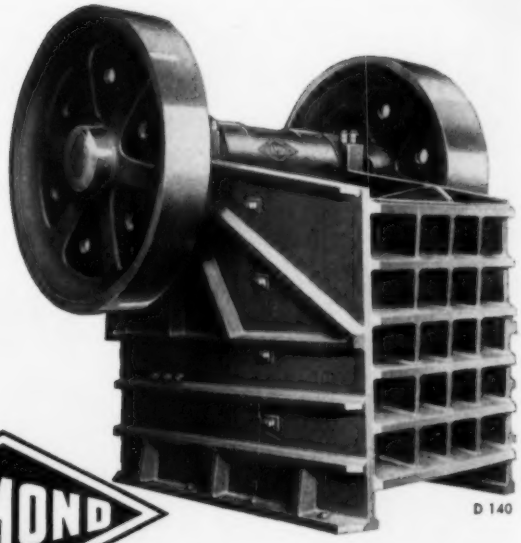

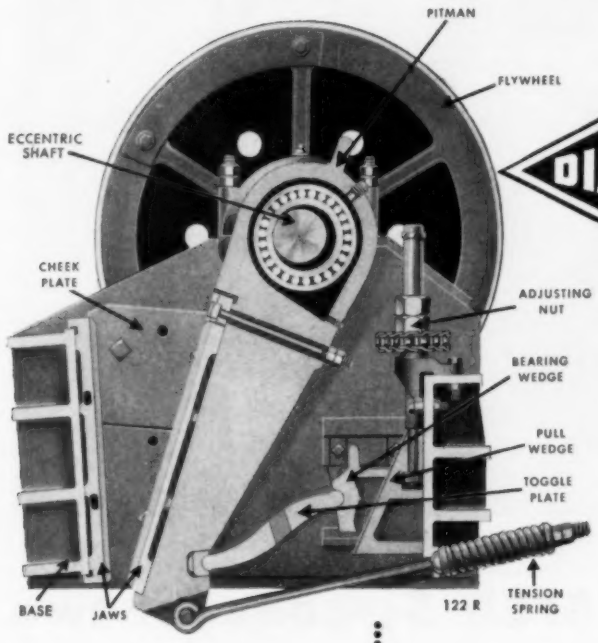

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Records in hundreds of pits, quarries, construction jobs, prove that a Diamond Jaw Crusher is a top performer. Its ability to take rough punishment and produce greater tonnage per square foot of jaw area, makes it a profitable investment. If it's your responsibility to see that aggregate production costs are kept down, you'll want to get complete details on Diamond Jaw Crushers . . . no obligation. Write for catalog No. D-116.

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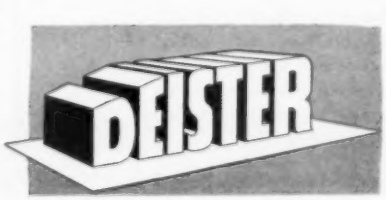

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pit and quarry

April 1958

They're Worth Reporting!

THIS April, 1958, issue of PIT AND QUARRY is, entirely because of the scheduling of several important conventions in quick succession, essentially a convention reports number. In it are the reports of the recent conventions of the National Sand and Gravel Assn., the National Crushed Stone Assn., the National Slag Assn., the National Crushed Limestone Institute, and a few others of interest to smaller groups of our readers. This grouping of meetings now occurs every second year, when N.S.G.A. and N.C.S.A. have their annual conventions and biennial machinery expositions in consecutive weeks at the same location for the convenience of the producers and the machinery manufacturers.

In this age of corner-cutting and painless education it was refreshing to see that at these meetings there was no reduction in the quantity or quality of papers presented. They were in every way up to the high standards of previous years. Producers attended in record numbers, crowding the meeting rooms and the exhibit halls in their effort to gain the utmost benefit from their visit.

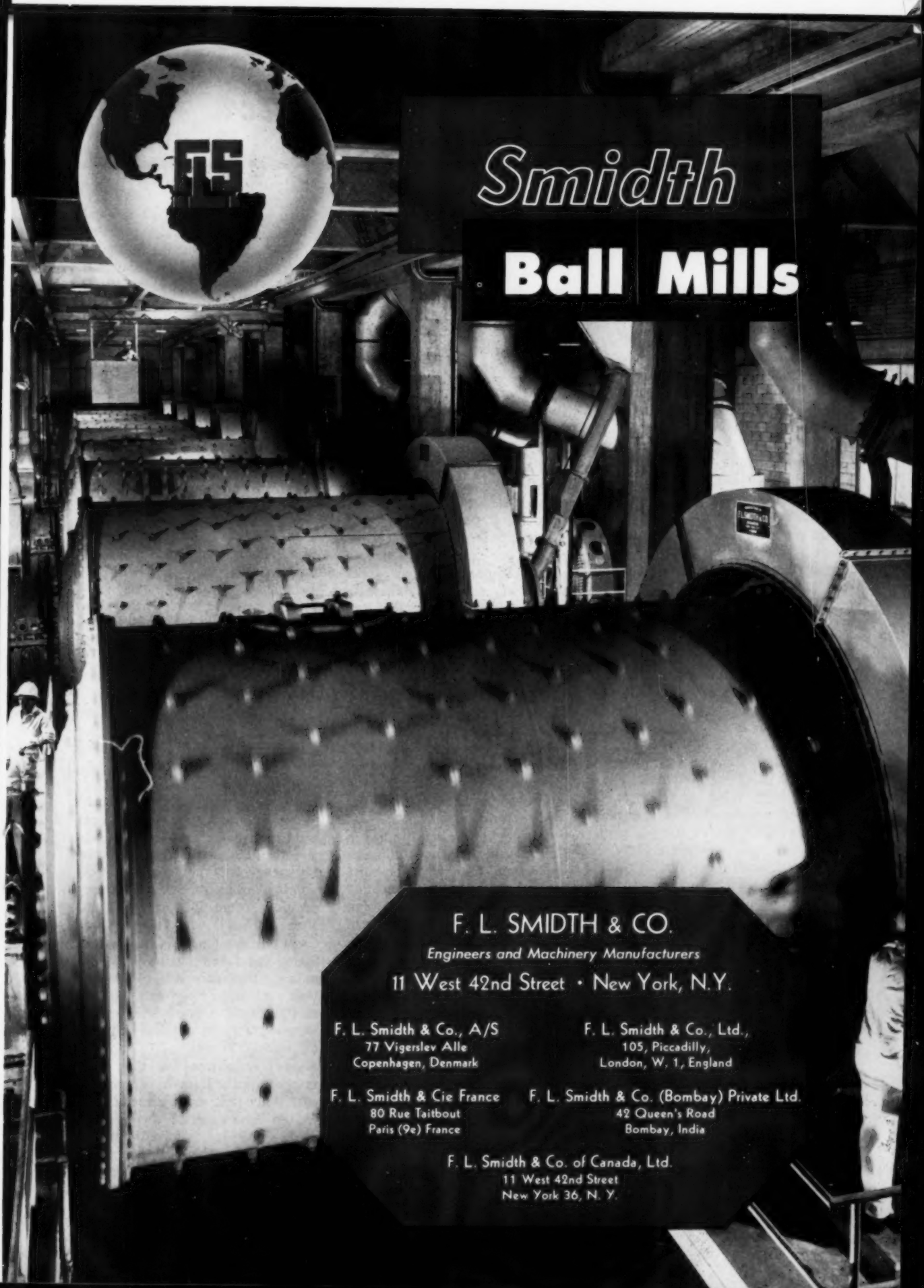
OBVIOUSLY these people were there to learn everything they could to help them in the successful conduct of their business. They listened closely to the authoritative presentations of speakers on such subjects as business conditions, the road program, public relations, zoning, depreciation, percentage depletion, legal and tax developments, technical matters, merchandising practices, labor relations, operating problems, etc. These speakers, many of them leading producers in the aggregates industries, gave their listeners specific and detailed information and advice on these subjects—not condensed and easily-absorbed generalities. As a result, producers left these meetings much better informed, and much better equipped to solve their own individual problems.

Now, more than in any other recent year, the producers of nonmetallic minerals need all the helpful information they can get. In order to compete successfully under present conditions of lower demand they must improve the efficiency and economy of their operations and the quality of their product, and they must learn again how to sell. The best available information on all these subjects was presented at these conventions for those who could attend.

FOR the many thousands of producers who could not attend these conventions, and others who are not members of the associations involved, the only access to this invaluable information is through the trade papers of their industries. We have always felt it our duty to provide these people with comprehensive reports of conventions, detailed enough to be of practical value in the solution of their own problems. This we have been able to do through the courtesy and co-operation of the various associations involved, whose leadership is broad-minded and foresighted enough to realize that they represent not only their paying members but the entire industry as well.

It is because of this firm conviction about what we owe to our readers that we present in this issue adequate and usable reports of these important conventions.

Walter E. Trauffer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Washington News Letter

By S. HERBERT UNTERBERGER

NOW IT appears almost certain that President Eisenhower's prediction that the current recession would bottom-out in March was too optimistic, and the rush is on to take some substantial action. As is usual in Washington, political considerations appear to be taking precedence over economic considerations.

To obtain political advantages, each party is trying to "beat the other to the draw," at least, in suggesting measures to be taken. Obviously, they are both trying to establish a record to be used in the election this fall. Thus, the Democrats will claim that they were responsible for any action taken to expand government spending for construction. They will point out that they were the sponsors of the bill which would authorize an almost two-billion-dollar federal appropriation for housing, mostly for buying mortgages.

Senator Lyndon Johnson will not neglect to point out that he was the sponsor of the resolutions calling upon the Administration to speed up the program of civil and military expenditures for public works. And Senator Albert Gore will not neglect to tell the world that it was his bill which reversed the trend in spending for highway construction by appropriating extra funds for the completion of the program in the 13 years originally planned, rather than in the stretched-out period which the Administration was using.

This last proposal was something that the Administration clearly had on its agenda, but Senator Gore got there first, thereby beginning a trend which is pervading most of the current anti-recession activity.

The next step was taken by the Administration in President Eisenhower's seven-point program. Most of the points involved no new proposals. The Democrats could easily have taken credit for them by arguing that all the President did was yield to their urging. Accordingly, a new feature was needed, and this new feature was the proposal to extend unemployment compensation benefits to a maximum of 39 weeks instead of the 20 to 26 weeks of benefits stipulated in most state laws. This was something the Democrats had not talked about. They had missed a bet; but their recovery was rapid. Even before the Administration could get its bill extending unemployment compensation into the hopper, a Democratic measure proposing an extension of unemployment compensation benefits to 42 weeks was submitted as a bill.

Immediately thereafter, the Republicans, presumably fearful that they were losing the race for suggesting anti-recession measures, came forward, through Vice President Nixon, with their approval for broad tax reduction. This was only a couple of weeks after the President told a press conference that while he had a tax reduction in mind, he did not regard it as a measure that would be taken in the immediate future.

It does not appear that Mr. Nixon was expressing the new sentiments of the Administration. To be sure, he hedged somewhat by indicating that the precise measure had not been worked out, but that it would depend on economic indicators soon to become available. Nevertheless, his forthright statement that he would prefer to "go down the tax cutting road rather than the spending road" may well have set the machinery in motion for making a substantial tax cut inevitable.

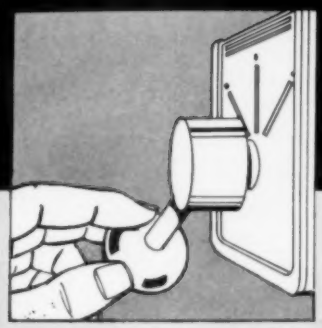
This statement moved the area of debate from the question of whether we should have a tax cut to the next question, namely, what kind of tax cut should be made. Here, the Nixon statement already may have committed the Administration. In talking about the kind of tax cut that may be made, he is reported to have said, "It should be aimed at putting money in the hands not only of customers, but in the hands of investors and job givers." It would appear, then, that the Administration is contemplating a tax reduction program which would contribute a little of the benefits to everybody. This appeared to be one of those judgments, in which political consideration had a great influence.

The Republican party, particularly the Eisenhower branch, draws its support from a very broad range in the population; and it could never have won its sweeping victory without substantial support from the working group. Professional men, businessmen and even farmers were the groups most sympathetic to that brand of politics. If taxes are to be cut, it is a political necessity that the largesse be distributed among the supporters in a manner that looks equitable.

Even in this matter of taxes, the Democrats are likely to beat the Republicans to the draw. Despite the Nixon statement, the Republicans, by virtue of being in power, are also the ones who will be held responsible for the consequences and they are likely to be more conservative. Unless they are forced to act sooner, it is the general impression in Washington that the Administration would like to wait until after April 15, when the next income tax installment is due, before taking any definite action. It is very unlikely that they will be able to wait that long. Now that the Administration's position is clear, the Democrats again will feel impelled to move. Traditionally, and for good political reasons, they have favored and will favor simple tax cuts which will redound principally to the advantage of the working class and other relatively low income people. The easy way to do this is by increasing the personal

(*Continued on page* 118)

Crushing Specification Stone?



Bonus capacity, superior quality with Hydrocone Crushers

YOU can gain extra hours of production each time you change a setting in the *Hydrocone* crusher. Just flip a switch, and in *less than a minute* the *Hydroset* mechanism raises or lowers the crushing cone for precise control of product size. Equally important, you get superior quality stone to meet rigid specifications. Crushing chamber design and choice of eccentric throws assure uniform cubical characteristics and even distribution in all mesh sizes.

Adjusts for wear, clears tramp iron and releases jams

"One-man, one-minute" operation also applies to compensating for wear on mantle and concave, and emergency unloading — just flip the switch to raise the mainshaft. In addition, you get protection against tramp iron or other uncrushable materials with an automatic reset in the hydraulic system.

To get all the details on the fastest and most efficient crusher operation, ask your A-C representative for Bulletin 07B7145B. Or write Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

Hydrocone and Hydroset are Allis-Chalmers trademarks.

A-C ALLIS CHALMERS

ALLIS-CHALMERS

A-5593

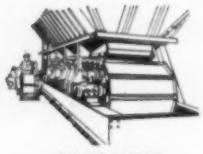
This conveying system highballs huge rock tonnages for Inland Lime and Stone Company, Port Inland, Mich., one of the world's largest producers of crushed stone. These are two of four giant stackers delivering stone to storage.

STEPHENS

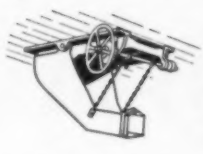
THE BIG NAME IN BULK MATERIALS HANDLING

BELT CONVEYOR

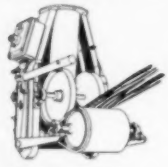
CARRIERS



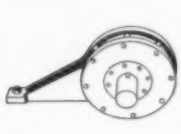
MANGANESE STEEL PAN FEEDERS



TUNNEL GATE



SWIVELOADERS



ENCLOSED TYPE HOLDBACKS

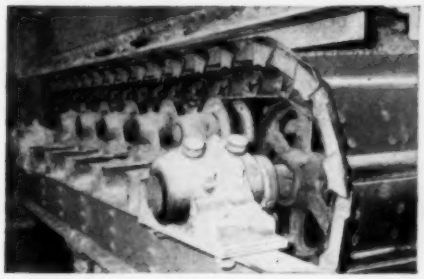
For performance above and beyond the call of normal duty in rock products handling

S-A CONVEYING SYSTEMS

The challenges of production efficiency and economy are renewed with every order for permanent conveying facilities in the rock product industry. Each conveying system calls for an individual engineering effort that will enable the operator to achieve maximum output at the lowest cost. Every operator's handling problem is a little different, the layout unlike any previously confronting the conveying engineer.

STEPHENS-ADAMSON has been making its experience in this field available both at home and abroad for 57 years. Performance-wise, S-A engineered conveying systems have established a reputation for getting the job done under conditions that could exist only in rugged pit and quarry arenas. In fact, the very first sand and gravel conveying system ever built by S-A—nearly fifty years ago—is still in everyday operation.

If you are confronted with the challenge of handling rock tonnages beyond the capabilities of ordinary conveying know-how and equipment, STEPHENS-ADAMSON engineering services are at your disposal. Call your area representative.



36" wide, 14' long AMSCO manganese steel feeder takes quarry stone from a surge bin to scalping screen at Elmhurst-Chicago Stone Co., Elmhurst, Illinois. This type is the most rugged and powerful feeder ever built. This unit has handled millions of tons of rock.

A 5' by 12' triple deck vibrating screen in use by Elmhurst-Chicago Stone Co. is part of an over-all STEPHENS-ADAMSON conveyor system. Noted for accurate sizing and long, maintenance-free service, these S-A units are built for normal and heavy duty.

-ADAMSON

EQUIPMENT

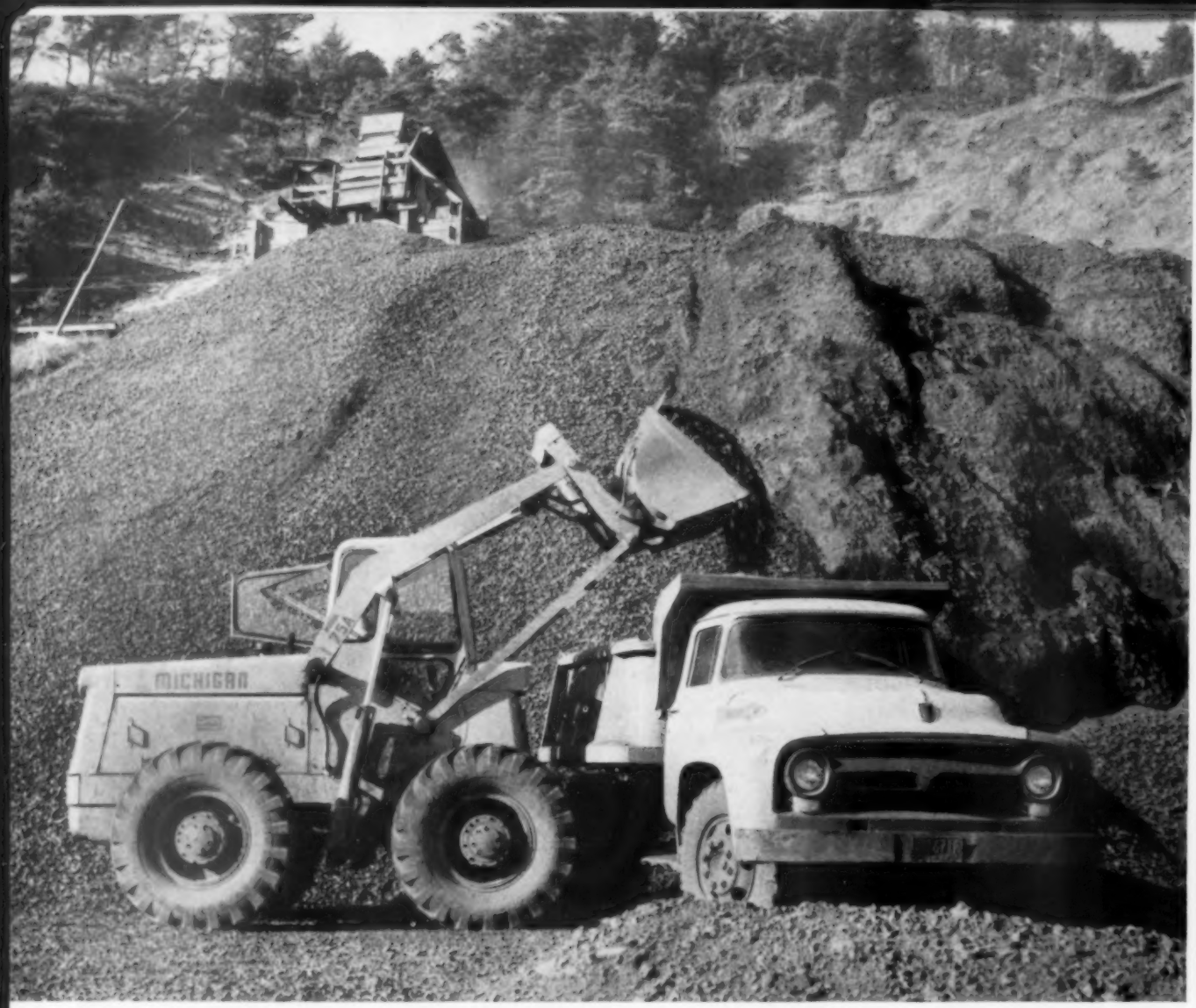
S-A district or main plant offices can supply complete information on any conveyor product, or any phase of bulk material handling. Write or call for bulletins on any conveyor product.

MFG. CO.

MAIN OFFICE AND PLANT
20 RIDGEWAY AVENUE
AURORA • ILLINOIS

PLANTS LOCATED IN: LOS ANGELES, CALIFORNIA
CLARKSDALE, MISSISSIPPI • BELLEVILLE, ONTARIO

SEE US IN BOOTH 348-349, MATERIAL HANDLING SHOW, LOS ANGELES, MAY 8-10.



In 3 years, 1¼ yd Michigan loads 300,000 yds of rock. Yet...

REPAIR COSTS TOTAL $18.45

In studying most efficiency reports, you have to remember one extremely important fact: that the data given usually cannot legitimately be applied to machines now available. Changes galore—for good or bad—have been made since the veteran unit was built. That is why this report seems to us so significant. The Michigan Tractor Shovel described is in every important component ***EXACTLY*** *like the Michigans made today. In fact, all 8,000 Michigan Tractor Shovels built have been like the first one—a tribute to the efficiency of design and efficiency of their all-Clark designed and built power trains.*

For the past three years, Yaquina Head Quarries, Newport, Oregon, has used this Model 75A Michigan Tractor Shovel 6 to 8 hours a day, 5 days a week, truck-loading crushed rock. The machine has handled over 300,000 yards of material, ranging in size from ¼" to 4" minus.

Its only downtime in all these months has been for changing points and plugs, and for replacing two emergency brake cables.

The work took less than 30 minutes and parts cost exactly $18.45.

For this superb record, credit belongs partially to excellent machine design and construction . . . partially to Plant Supt Virgil Landess' insistence on a simple, regular, preventive maintenance program. The Michigan is greased every day. Rear end and torque converter are checked twice a week. Oil is changed every 40 hours, filters every 80 hours, and a one-hour maintenance check made every two weeks.

"Cheap insurance for keeping an excellent machine excellent," says Quarry Owner Roy Sawyer.

Stock-piles at the Yaquina Head quarry are located in a quarter-mile semi-circle around the crusher, on two levels. Good brakes, excellent visibility, 26 mph speed, fingertip power steering combine to cut travel time between loading locations.

Material—after shooting, secondary shooting, crushing, and normal 2½-to-1 swell—weighs 2600 to 2800 lbs per yd. Mostly basalt, tests show a very small percentage of iron in the rock. Assays have picked up gold, too—80c worth per ton.

Steep 20% grade between stockpile levels proves no problem for the powerful four-wheel-drive Michigan—even in wet weather.

Among the many odd jobs done by Yaquina Head's quarries mobile Michigan Tractor Shovel: moving a 4,000 lb crusher head.

Loads typical truck in one minute

The 80 hp Michigan speeds all kinds of scattered assignments. It lifts crusher heads, for example. Picks timbers. Sets motors. But mostly it loads trucks. "Everything from pickups to 15 yard semis with 8 ft high sides," describes Owner Sawyer. A typical 5 yard truck is loaded in four bucket-fulls. Time: 1 to 1½ minutes.

Reduces truck waiting time 80%

Fast loading—plus fast travel between the nine stone stockpiles—has cut truck waiting time to practically zero. "In the old days—when we handled loading with a ¾ yard rubber-tired machine of another make—trucks often had to wait 10 to 15 minutes each for loading service," remembers Mr. Sawyer. "That old machine couldn't load out more than 250 yards a day. Our Michigan easily loads 400 to 500 yards a day. And it *has* loaded as much as 835 yards (in 8 hours)."

Eight models now available

How do your production requirements compare? If they're the same (or less), your most economical bet for the job probably would be a Michigan 1¼ yard all-wheel-drive model (like the machine described here). For greater output, you have a wide choice of bigger machines: with 2, 2¼, *and the new 4 or 6 yard buckets* (standard SAE measure). For clean-up around crushers and belts, there's a 16 cubic *foot* size. Eight standard models in all. See your Michigan Distributor for details.

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2479 Pipestone Road
Benton Harbor 7, Michigan
In Canada: Canadian Clark, Ltd.
St. Thomas, Ontario

Michigan is a registered trade-mark of

CLARK® EQUIPMENT

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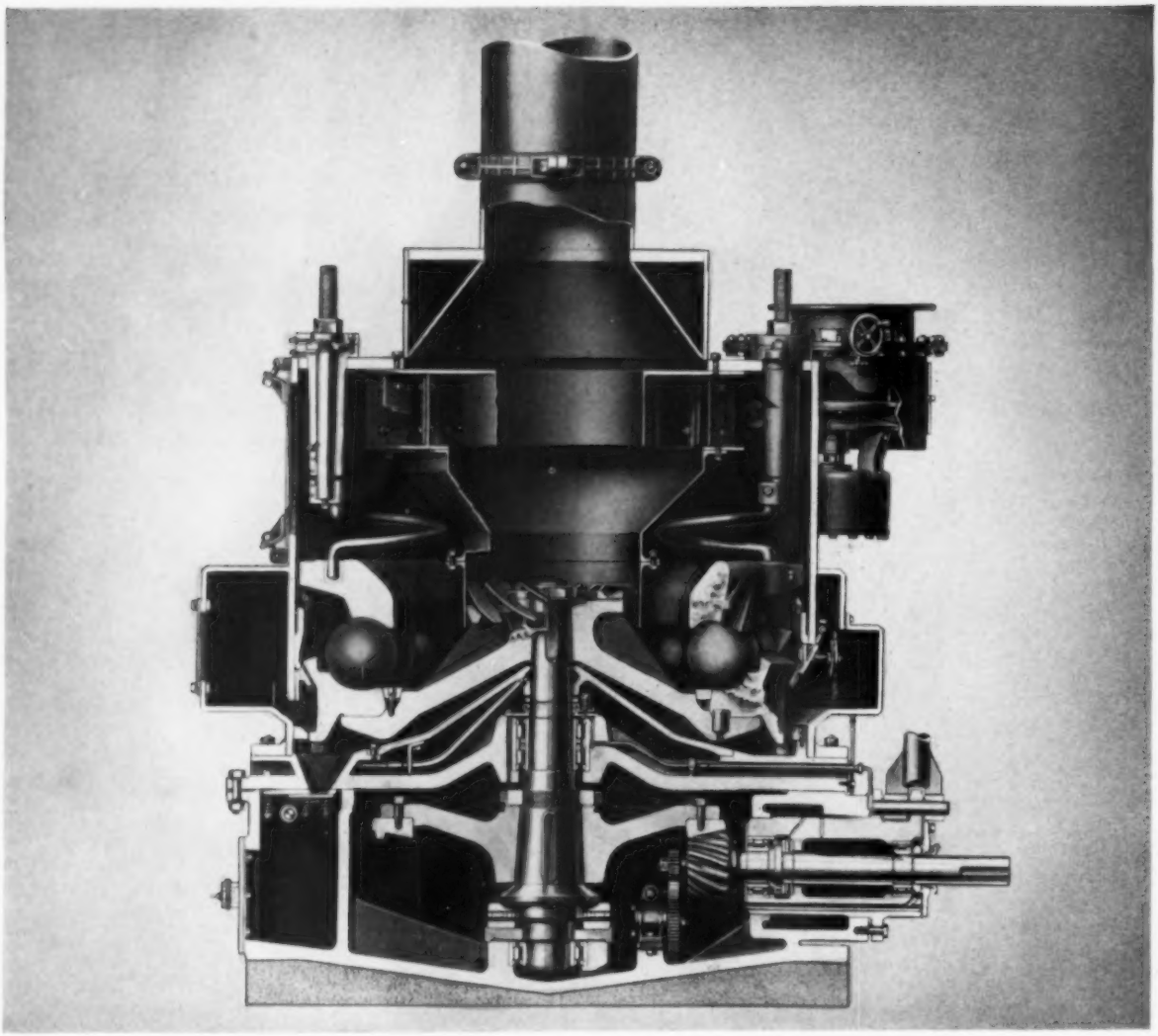

Low pulverizer maintenance assures long continuous operation in direct kiln firing

B&W Pulverizers for the direct firing of rotary kilns are engineered and built to give long, uninterrupted service with minimum maintenance. The pulverizer is compact, self-contained, and fully enclosed. Grinding elements are made of long-life, special wear-resistant metals, and there are no bearings or parts in the grinding zone to be lubricated. The helical reduction drive with anti-friction bearings is isolated completely from the dust and high temperatures of the grinding zone. Lubrication is automatic. The result—less wear and tear on vital operating parts—and less maintenance.

No dismantling of pulverizer or piping is necessary during scheduled shut-downs to replace grinding elements. Large, quick-opening access doors in the pulverizer housing permit speedy inspection and removal of parts.

These B&W design and maintenance features, backed by years of satisfactory performance, assure continuous, trouble-free service in modern kiln operation. Write for additional information to the Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

BABCOCK & WILCOX

BOILER DIVISION

C-219

If any of your work is in sandy soil, you well know all the maintenance tracks need. This New Jersey company figured they spent $22,000 in parts alone every year. So they switched to rubber, now

SAVE BIG REPAIR BILLS, GET MORE WORK DONE!

Bennett Sand & Gravel Company, Manasquan, New Jersey, qualify as *real experts* on track wear. All their work is in gravel or high-silica sand, which forms the floor of their 1,000 acre quarry. In the past, they figured re-bushing and new sprockets were needed on each of their crawler-dozers twice a year. Complete sets of rails had to be replaced every eight months. Rebuilding jobs on three crawler dozers cost over $22,000 per year *in parts alone.* Shop time for the track repairs totalled *400 to 500 man-hours per year.* To eliminate this high cost, Bennett decided to try rubber. Their local Michigan Distributor heard about it, got permission to demonstrate a Model 180 Tractor Dozer. Bennett management liked it so well, they insisted it stay right on the job.

"Tires don't wear out"

The Michigan started to work in summer, 1956. To date, the tires show virtually no wear. Paul Bennett, Jr., Company Vice President, says he expects them to "last indefinitely." For comparison, he points to a tractor loader which has worked constantly and still has original tires after 6 years. A bottom-dump hauler has original treads after 9 years. So, Bennett figures, the tires on their Michigan dozer, with its steerable wheels, should be good for thousands of hours. The machine does everything, too . . .

Spread at 6 scattered dumps

Its regular jobs include:

1. Keeping three big sand dumps pushed off. Types of sand: mason, concrete and coarse grade. Job was once tried by another make of rubber-tire dozer, but it bogged down hopelessly in the often-wet sand.
2. Spreading truck-dumped gravel at three dumps: pea-size, ⅜" and 1" stone. Major advantage in this operation is way Michigan's low-pressure tires don't crush the gravel . . . a real problem with crawlers when selling gravel for state work.
3. Cleaning spillage from haul roads.
4. Cleaning around washer.
5. Building roads at secondary pit five miles away. Unit gets to this assignment *under its own power* at 27 mph.

"Easier to run than crawlers"

"We do about 50 kinds of odd jobs, as well," says John Gifford, a dozer operator with Bennett *since 1940.* "The Michigan is a pleasure to run all the time. Hit a good-sized stone while driving a crawler, for instance, and you really get a jar. In our Michigan, you roll right over it, stay in perfect control. It's a cinch to operate the Michigan after running a crawler—and a lot faster too. *Michigan gets around the plant as fast as a truck,* handling dozens of jobs—doing well at all of them!"

Available on lease-purchase

If slow speeds and sand-in-the-tracks are grinding away at your profits, it will pay you to get full facts on this Dozer. Your local Michigan Distributor will be glad to arrange a trial demonstration—*you* pick the job. You *needn't* keep the Michigan we demonstrate . . . but we guarantee if you have any work in sandy soil, or any scattered odd jobs, you'll be tempted. All sorts of purchase plans can be arranged . . . including no-money-down, pay-as-you-profit lease-purchase.

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Construction Machinery Division
2479 Pipestone Road
Benton Harbor 36, Michigan
In Canada: Canadian Clark, Ltd.
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ESCO CUTTING EDGES AVERAGE 200

RICHARD CHAFIN, project engineer of Madonna Construction Company, uses ESCO cutting edges to keep maintenance costs low.

HOURS OF SERVICE
...on each side!

The Madonna Construction Company switched to *ESCO* cutting edges after on-the-job tests that "represented every known strata in southern California." Richard Chafin, project engineer, relied on *ESCO* bits to move 200,000 yards of sandy gravel, studded with 36-inch donickers... and in doing so compiled maintenance figures that showed *ESCO* bits averaging 200 hours before reversing.

Cutting edge longevity is only half the story. Bits that last longer mean less down time, lower charges against machinery idled through frequent bit changes. *ESCO* cutting edges, Chafin found, maintained the 150 cubic yard-per-hour rate that he considers essential if earth moving is to pay.

What *ESCO* products did for this project engineer, they can do for you. Put *ESCO's* durability to work for you. Use *ESCO* cutting edges —they'll save you time, when time is money.

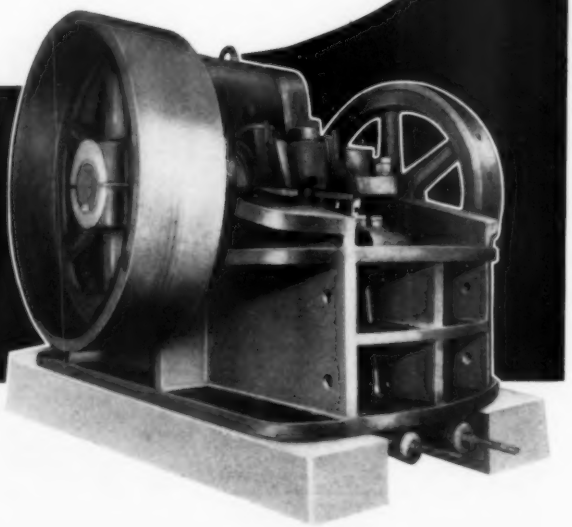
See your nearest ESCO dealer or write direct.

ESCO®

ELECTRIC STEEL FOUNDRY COMPANY

2159 N. W. 25TH AVE. • PORTLAND 10, OREGON
MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
ESCO INTERNATIONAL, NEW YORK, N. Y.
IN CANADA ESCO LIMITED

Traylor-MADE HB JAW CRUSHER



56" x 72" Type HB Jaw Crusher installed in quarry of a steel mill.

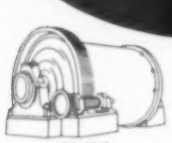
Over half a century of experience results in many advantages for the user of Traylor HB Jaw Crushers. Jaw plates are the famous curved type—the pitman shaft is made of annealed open hearth forged steel—the pitman is light but of great strength—the swing jaw is made of cast steel of extra-heavy box section design to secure maximum strength. These are a few of the features of the Traylor HB Jaw Crusher. For additional information, write for bulletin No. 5105 today!

Traylor

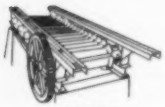
TRAYLOR ENGINEERING & MFG. CO. 1035 MILL ST., ALLENTOWN, PA.

Sales Offices: New York — Chicago — San Francisco

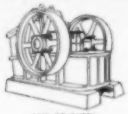
Canadian Mfr.: Canadian Vickers, Ltd., Montreal, P. Q.


BALL MILLS

ROTARY KILNS


APRON FEEDERS

PRIMARY GYRATORY CRUSHERS


JAW CRUSHERS

SECONDARY GYRATORY CRUSHERS

News of the Industry

Huron Portland Cement Holds Seven-Day Exhibit To Mark 50th Anniversary

In celebration of its 50th anniversary, Huron Portland Cement Company, Detroit, Mich., recently held a seven-day exhibit to demonstrate how cement is made, tested, and used.

Co-operating with Huron on this exhibit were the Besser Company, Allis-Chalmers Corporation, the Portland Cement Association, the Fuller Company, and the Michigan State Highway Department.

Limestone Products Co. Sold To North Western-Hanna Coal

Limestone Products Company, Menominee, Mich., was purchased by the North Western-Hanna Fuel Company, the sale to become effective May 1, 1958.

Stephenson Smith, president of Limestone Products, will continue as manager and all personnel will be retained with the exception of A. T. Stainer, secretary-treasurer, who is retiring at the end of May.

Limestone Products Company produces lime for paper, building, leather, copper, and agricultural industries located primarily in Michigan and Wisconsin. The ready-mix concrete operation serves the area of Menominee, Marinette, and Peshtigo.

Ross Sand & Gravel Co. Acquired by Allis-Chalmers

The Allis-Chalmers Manufacturing Company, Milwaukee, Wis., has purchased the properties of the Ross Sand and Gravel Company, Pomeroy, Ohio, for $140,000 at auction. The plant was said to have been valued at $500,000.

The sale followed a recent foreclosure suit in which Allis-Chalmers asked judgment on two notes totalling $148,616.63, plus interest and costs. Other liens against the company were held by the West Virginia Steel Corporation and the Pomeroy Cement Block Co.

The Ross Sand and Gravel Company was launched in 1953 and had been in operation until January, when production was suspended.

Directors of the Marquette Cement Manufacturing Company, Chicago, Ill., have approved new capital expenditures of $4,000,000, mainly for cost-saving improvements at its plant in Rockmart, Ga.

The country's oldest operating limestone quarry is located in Limerick, R. I. It is generally believed that the quarry was opened in 1643 by a man named Thomas Harris.

Coming Events

May 12-14, 1958—Point Clear, Ala. 56th annual convention, National Lime Association. Grand Hotel.

May 14-16, 1958—Hot Springs, Va. 23rd annual convention, National Industrial Sand Association. The Homestead.

June 22-27, 1958—Boston. 61st annual meeting and exhibit, American Society for Testing Metals. Hotel Statler.

July 17-18, 1958—Hot Springs, Va. Directors meeting, National Crushed Stone Association. The Homestead.

September 30-October 1-2, 1958—Las Vegas, Nev. Semiannual meetings, boards of directors of National Sand and Gravel Association and National Ready Mixed Concrete Association. Hotel Tropicana.

Riverside-Arizona Cement Plans 1,500,000-BBl. Plant At Clarkdale, Ariz., Site

Signing the contract for the construction of the new 1,500,000-bbl. capacity cement plant at Clarkdale, Ariz. are: seated, left to right, Del W. Fisher, president, Fisher Contracting Company, general contractors, and D. C. MacBride, president, American Cement Corporation. Standing, left to right: Garner A. Beckett, chairman of the board, American Cement Corporation, and Warren Hunter, Fisher vice-president.

A 1,500,000-bbl. capacity cement plant will be built in Clarkdale, Ariz., by the Riverside-Arizona Cement Company, a newly formed division of American Cement Corporation, Philadelphia, Pa.

The general contract for the design and construction of the facility has been awarded to Fisher Contracting Company of Phoenix, Ariz. Orders for kilns and mills have been placed with F. L. Smidth & Company, for all electrical equipment with General Electric Company, and for belt conveyors, screens, and other material handling equipment with Hewitt & Robbins. A 48- by 60-in. Allis-Chalmers jaw crusher will be moved to Clarkdale from Riverside's plant in Oro Grande, Calif.

Fluor Corp., Ltd., Los Angeles, has been awarded the engineering contract.

The plant is scheduled for completion before the close of 1959.

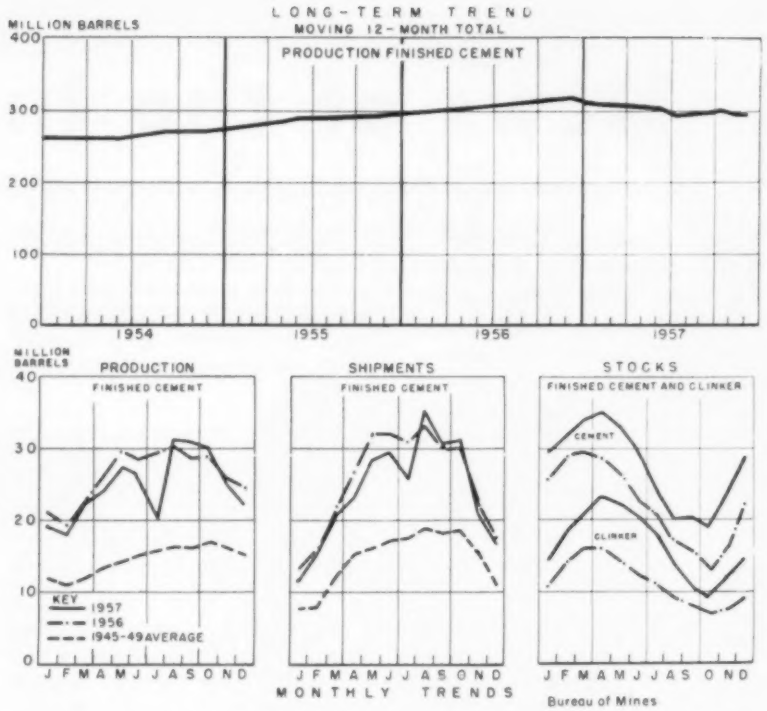
January Contract Totals Show Decline from '57 In All Major Categories

January contracts for future construction in the United States registered the sharpest decline in more than a year, according to the F. W. Dodge Corporation. The January, 1958, contracts totalled $2,066,-059,000, a drop of 10 percent from the same month last year. The extent of the decline was widespread, with nearly every major category showing a decrease from a year ago.

Contracts for non-residential buildings in January, 1958, were valued at $758,771,000, down 17 percent from the comparable month last year. Within this category, manufacturing buildings registered the sharpest drop, with contracts running 53 percent below a year ago. Commercial and educational building contracts showed declines of 6 and 4 percent respectively. Contracts for hospitals and religious buildings were down substantially.

Residential building contracts in January, 1958, amounted to $777,-423,000, 5 percent below the January, 1957, level. Contracts for one- and two-family houses accounted for the major portion of the decline, while apartment building contracts continued to show strength relative to a year ago. The number of dwelling units represented by the January residential contracts was 63,121, down 2%.

Heavy engineering construction contracts in January were valued at $529,865,000, down 7 percent from January, 1957. There were sharp declines in public works.



SUMMARY—Production of finished portland cement in December, 1957, as reported to the U. S. Bureau of Mines, totaled 22,386,000 bbl., a decrease of 8 percent from December, 1956. Mill shipments in December, 1957, totaled 16,834,000 bbl., a decrease of 6 percent compared with December, 1956. Stocks of 28,550,000 bbl. of finished portland cement on hand December 31, 1957, were 27 percent more than those on hand December 31, 1956. Clinker production during December, 1957, totaled 26,008,000 bbl., a decrease of 2 percent over the December, 1956, figure.

PRODUCTION—One hundred and sixty (160) plants in 37 states and Puerto Rico reported a production of 22,386,000 bbl. of finished portland cement during December, 1957, compared with 24,429,000 bbl. in December, 1956.

Clinker production during the month of December, 1957, was 26,008,000 bbl., compared with 26,450,000 bbl. during the same month in 1956.

High-early-strength portland cement production in December, 1957 (1,716,000 bbl.), increased 14 percent over the December, 1956, production.

Production of prepared masonry cement during December, 1957 (1,067,000 bbl.), increased 7 percent over the December, 1956, figure.

SHIPMENTS—Mill shipments of finished portland cement for December, 1957, totaled 16,-834,000 bbl., compared to 17,822,000 bbl. in December, 1956.

In December, 1957, shipments were higher in ten (10) districts and lower in thirteen (13) districts than in December, 1956. The greatest increases were in the Wyoming-Montana-Idaho, Colorado-Arizona-Utah, and Louisiana-Mississippi districts. The greatest decreases were in the eastern Pennsylvania-Maryland, Tennessee, and New York-Maine districts.

Mill shipments of high-early-strength portland cement totaled 891,000 bbl. in December, 1957, a decrease of 7 percent over the 963,000 bbl. shipped in December, 1956.

Mill shipments of prepared masonry cement in December, 1957, totaled 738,000 bbl., a 14 percent decrease from the 855,000 bbl. shipped in December, 1956. Over half of these shipments were from mills in the northern states east of the Mississippi River. Prepared masonry cements are shown in 376-lb. barrels, although they are sold in barrels of varying weights.

STOCKS—Mill stocks of 28,550,000 bbl. of finished portland cement were on hand December 31, 1957, an increase of 27 percent over the 22,440,000 bbl. on hand December 31, 1956. Stocks of clinker increased 55 percent, from 9,443,000 bbl. on hand December 31, 1956, to 14,626,000 bbl. on hand December 31, 1957.

JANUARY-DECEMBER PRODUCTION, SHIPMENTS—In 1957 the total production of finished cement was 297,801,000 bbl., compared with 316,460,000 bbl. in 1956. Total shipments during the 12 months amounted to 289,110,000 bbl. in 1957, compared with 308,767,000 bbl. for the entire year in 1956.

Alpha Portland Cement Names Safe Driving Contest Winners

Six district sales managers of the Alpha Portland Cement Company, Easton, Pa., have received the first awards made under a safe driving program.

Contest winners are: Clinton K. MacTaggert, Chicago (Ill.) district manager, 33 years; Rutherford E. Brown, Washington, D. C., district manager, 32 years; William H. Carr, eastern district manager, 16 years; Horace E. Brown, Birmingham (Ala.) district manager, 8 years; Richard P. Williams, Chicago assistant district manager, 7 years; Carl H. Schlutow, St. Louis (Mo.) district manager, 7 years.

Each winner receives a savings bond every five years. These awards were presented by Richard L. Rhodes, general sales manager, at a meeting of executives and sales managers from the company's eight sales districts.

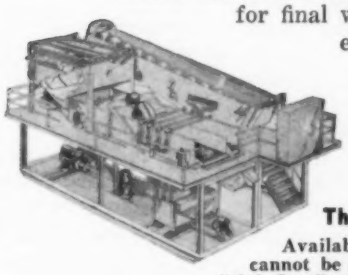
this time it's

Munn & Perkins

MODESTO, CALIF.

An Eagle Aggregate Washing-Classifying-Dehydrating Plant Section, consisting of a 32′ Water Scalping-Classifying Tank and a 44″ dia. x 32′ Single Screw Fine Material Unit enables Munn & Perkins to meet California State Highway specifications. This is accomplished in part by removal of a surplus of —⅛″× +#16 material, from the sand grading. Unwanted material is gathered by the multi-cell collecting-blending flume and routed to the pit area. Wanted meshes are discharged into the Screw Unit for final washing and dehydrating. Tom Croft, plant manager, reports economical, trouble-free operation. Output averages 800-tons daily. If you have an aggregate processing problem you can benefit from Eagle experience, facilities and service.

Send for Catalog 58.



The Eagle Heavy Media Separation Plant

Available for producers confronted with materials that cannot be separated by ordinary methods. This very practical "sink-float" plant employs the highly effective O.C.C. Separatory Vessel. Plant is made in four, readily transported, sections, easily assembled at new pit site.

SINCE 1872

EAGLE IRON WORKS

133 HOLCOMB AVE., DES MOINES, IOWA

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EAGLE IRON WORKS

Keystone Div. of Dravo To Build 200-Ft. Dredge For Service on Ohio River

A model of a new sand and gravel dredge to be constructed for Dravo Corporation's Keystone Division being examined by James Cormack, project engineer; Fred Seiler, design engineer; and W. L. Price, engineering manager.

Keystone Division of Dravo Corporation, Pittsburgh, Pa., plans to construct one of the largest dredges on the nation's inland waterways designed to produce sand and gravel aggregates.

Complete with its own heavy-media plant, impact crusher, and scrubber, the dredge will cost about $2,000,000; it will dig about 500 tons of material an hour. Construction will be done at Dravo's Neville Island shipyards, and completion is scheduled for 1960.

Keystone spokesmen state that the dredge will be equipped to separate four grades of aggregates. It will be operated on the Ohio River between Pittsburgh and Steubenville, Ohio. Reserves in this area are estimated to be sufficient to supply Keystone Division's sand and gravel requirements for the next 25 years.

Now in the engineering stage, the dredge will be 200 ft. long, 53 ft. wide, and 8 ft. 9 in. deep. Power will be furnished by two 500-kw. diesel-electric generators, and a bucket ladder will scoop up material from the river.

Heavy demand for large tonnages of sand and gravel and an expected increase in future demand for consistently high quality aggregates led to the decision to build a new dredge. Keystone Division is also completing a new rail-river terminal at Rochester, Pa. where barge loads of sand and gravel from the downstream dredges can be unloaded directly into railroad cars.

Lewis A. Parsons Retires From Calaveras Cement Co.

Lewis A. Parsons, consulting engineer for Calaveras Cement Company, San Francisco, Calif., was feted recently at the time of his retirement, in recognition of his 21 years of service with the firm.

Mr. Parsons joined the firm in 1937 as mining and research engineer and became consulting engineer in 1944. His contributions include a two-year exploratory program which led to plant expansion and a 300 percent increase in production capacity during the last 12 years; the introduction of large draft fans on three kilns; and studies resulting in a changeover to large-size shovels in 1947.

He was one of the originators of a new system of automatic kiln control placed in operation by Calaveras approximately four months ago.

At the 14th annual Basic, Inc., bowling sweepstakes held recently at Tiffin, Ohio, Clint Riley won first prize with a total pinfall score of 842 in four lines. In second place was Art Fogel, with an 838 score. Joe Broughton placed third with a score of 823 pins.

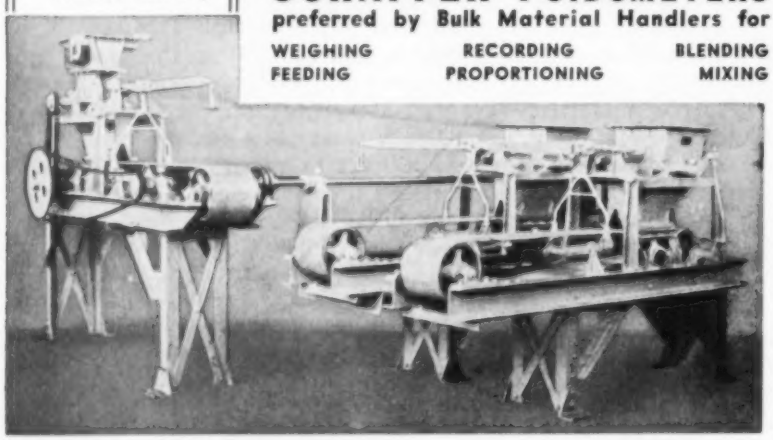
Fast, Accurate, Automatic SCALING

Battery of Poidometers in Process Industry

SCHAFFER POIDOMETERS

preferred by Bulk Material Handlers for

WEIGHING RECORDING BLENDING
FEEDING PROPORTIONING MIXING



Full details in **CATALOG No. 5**

OVER 1500 of these proved-and-approved machines help to keep production lines open in plants all over the world.

Poidometers earn their superior rating by insuring efficient, continuous, low-cost service. They make large contributions to product uniformity and record-high output.

Durable, easy-to-operate Poidometers are now available with remote control devices for showing and changing feed rate, and total weight recorders.

SCHAFFER POIDOMETER CO., 2828 Smallman St., Pittsburgh 22, Pa.

Enter 26 on card, page 101

Warner and Foster Retire From Warner Company—End Distinguished Careers

Irving Warner, advisory vice-president in engineering, and Alexander Foster Jr., vice-president of marine and retail operations, recently retired from the Warner Company, Philadelphia, Pa.

Mr. Warner began a career in the lime industry in 1905, when he proved that lime could be stored in steel tanks.

In 1940 Mr. Warner perfected a system of continuous-pressure hydration of dolomitic lime. He holds several patents on limestone calcination and lime processing.

The last five years have been spent on special projects: refractory for rotary kilns and collection of lime dust from kilns. His most recent work on these two problems is now being evaluated in the new No. 4 kiln at Bellefonte, Pa. In addition, he directed sand and gravel operations from 1933 to 1943.

In contrast to Mr. Warner, Alexander Foster Jr. has pioneered in concrete development. He became president of the newly-formed West Jersey Sand and Supply Company in 1919. Two years later he designed and operated the first commercial central-mix concrete plant in the country.

When the West Jersey Sand and Supply Company merged with the Charles Warner Company in 1927, Mr. Foster became vice-president of marine transportation, the retail departments, and the wholesale sand and gravel departments. In the retail departments he supervised concrete mixing and concrete equipment maintenance.

Mr. Foster has served as president of N.S.G.A. and also of N.R.M.C.A.

Knoxville Sand and Gravel Company is the new name of the Knoxville Sangravl Material Company, Knoxville, Tenn., purchased recently by the American Zinc, Lead and Smelting Company.

Canadian manufacturers of portland cement shipped or used 218,199 tons of cement in January, 1958, compared with 228,306 tons in the previous month. In 1957 the January shipments amounted to 169,302 tons. Actual production for January, 1958, was 326,630 tons, compared with 388,692 tons in the corresponding month of 1957.

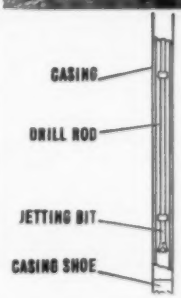
APRIL IS USO MONTH

A HOME AWAY FROM HOME AROUND THE WORLD

What's down there?

Empire TEST DRILLS come up with the RIGHT ANSWERS

EMPIRE Hydraulic Testing Drill



This test-drilling equipment is a "must" for pit and quarry operators and general contractors.
The EMPIRE Junior Drill used manually with solid rods or the EMPIRE Hydraulic Jetting Drill, using hollow rods, is the standard method of exploring sand and gravel deposits for composition and presence of clay, and accurately determines overburden depth and formation.
Easily transported in any kind of terrain. Assembled and ready for work in minimum time with ordinary labor.

Write TODAY for complete details

NEW YORK ENGINEERING CO. 75 WEST STREET NEW YORK 6, N. Y.

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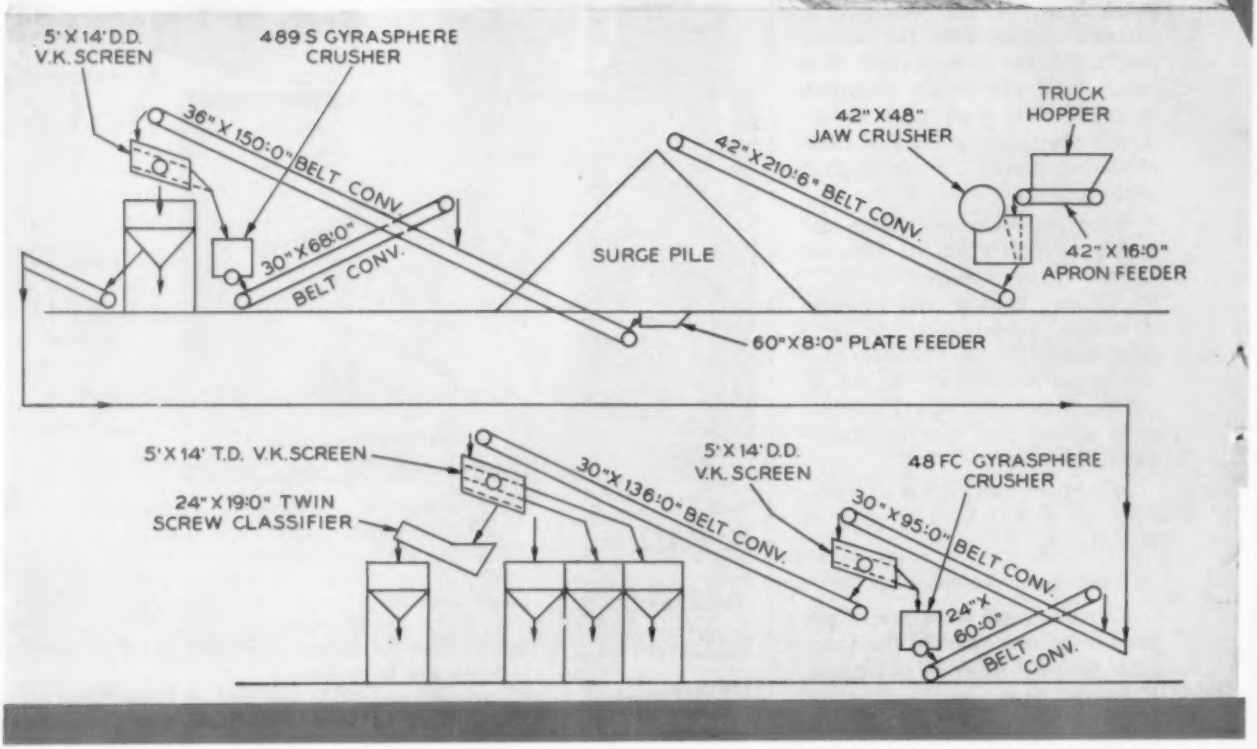

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504 E. CAPITOL DRIVE **MILWAUKEE 1, WISCONSIN**

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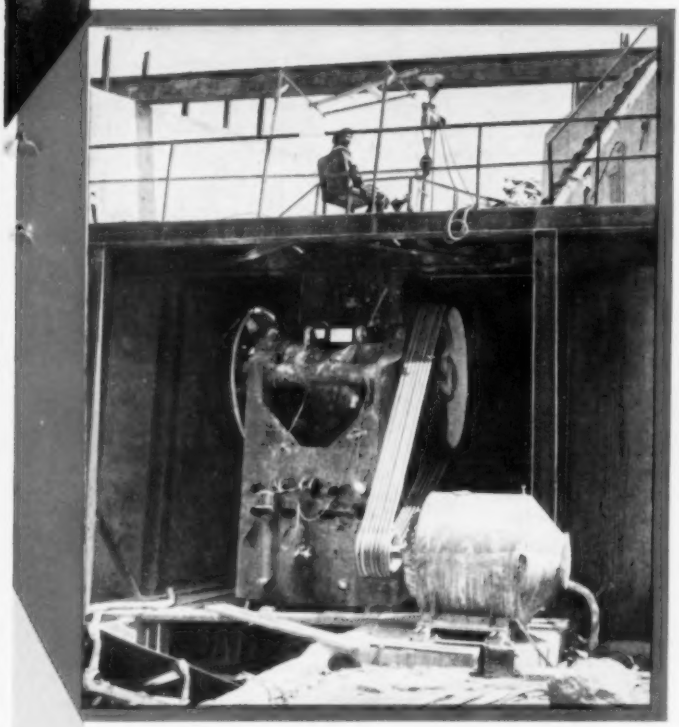
designed and *equipped*

GAINESVILLE STONE CO. plant
Gainesville, Georgia

Owned by JOHN RUTH and WALLACE MORGAN



PRIMARY CRUSHING PLANT — **Telsmith 42" x 48" Roller Bearing Jaw Crusher,** with **Telsmith 42" x 16' Heavy Duty Apron Feeder,** delivers 300-400 tons hourly of minus 7" material to the surge pile. Send for Bulletin 280 describing this new, big capacity jaw crusher with welded steel frame.

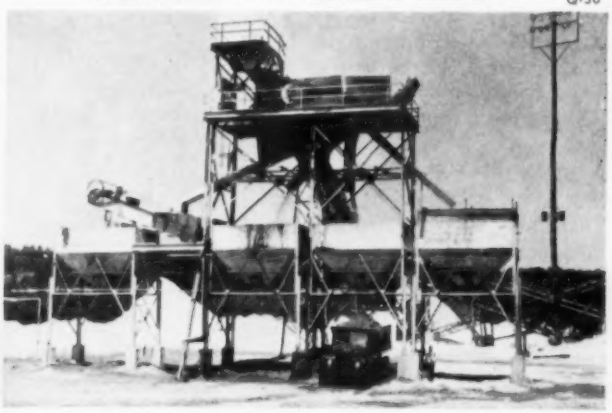
FINISHING PLANT— **All Telsmith equipped**— makes 200-225 tons hourly of minus 1¼" material. Minus 1¼" plus ¾", minus ¾" plus 4 mesh, minus 4 mesh are typical sizes Other sizes are made by changing screen cloth.

Primary Plant works 10 hours a day. The Finishing Plant works 16 hours a day, producing 3 or 4 sizes for use in batch plants and for county and state highway construction. Send for Bulletin 266 describing Telsmith Complete Plant equipment.

Telsmith 5' x 14' Double Deck Vibro-King Screen and 489-S Gyrasphere Crusher.

Telsmith 5' x 14' Triple Deck Vibro-King Screen and 24" x 19' Twin Screw Classifier.

Q-36



• Aggregate producing plant of the Greer Limestone Company and Mills, Gorman and Lambert, near Greer, W. Va. Barber-Greene conveyors transport aggregate to the tops of the various structures. To weatherproof these conveyors they are equipped with Armco covers. Two circular aggregate silos in the background are built from Armco liner plates.

Kelley Promoted to Post Of Zonolite Co. President

The directors of Zonolite Company, Chicago, Ill., have elected J. A. Kelley president to succeed J. B. Myers, who resigned. Mr. Myers will continue his association with the company as a consultant.

Mr. Kelley, who joined Zonolite in 1946, was responsible for the development of the firm's extensive mining and milling developments in South Carolina, and for the installation and operation of Zonolite plants in many cities in the South. He also managed Zonolite sales activities in these locations.

In 1953 he became a vice-president, and in 1956 was named executive vice-president, in charge of all plants and mines, including the original vermiculite deposit at Libby, Mont.

Material Handling Show Set For May 8-10 in Los Angeles

The 1958 Western Material Handling Show, sponsored by the American Material Handling Society will be presented May 8, 9, 10, in Los Angeles, Calif. The purpose of this show is to point out to cost-conscious management the ways and means of eliminating or reducing unnecessary or costly material handling which represents 87 percent of all direct labor costs in industry.

During this 3-day show more than $5,000,000 worth of equipment will be shown, largely for the first time, at the Great Western Exhibit Center.

Refinements in industrial packaging, warehousing, maintenance, automation, distribution, and freight and cargo handling systems will be presented for demonstration and explanation to the users, buyers, and managers of industry and business equipment throughout the West. The newest machines, cranes, hoists, industrial trucks, pneumatic, fluid, belt, screw, vibrator and overhead conveying systems plus the last word in procedures, servicing, and engineering of American and foreign know-how will be exhibited.

A fire at the Illinois Clay Products Company, Coal City, Ill., destroyed a building and caused damage estimated at $100,000.

January '58 Contract Total Up 4 Percent from December

Construction contracts in January reversed the downward trend of recent months and, at $1,250,000,000 bettered the December figure by 4 percent.

Public construction awards were $738,000,000, or 6 percent above the December weekly rate, despite a 3 percent decline in state and municipal work. Federal projects showed a 93 percent gain over December, and even private work improved 2 percent.

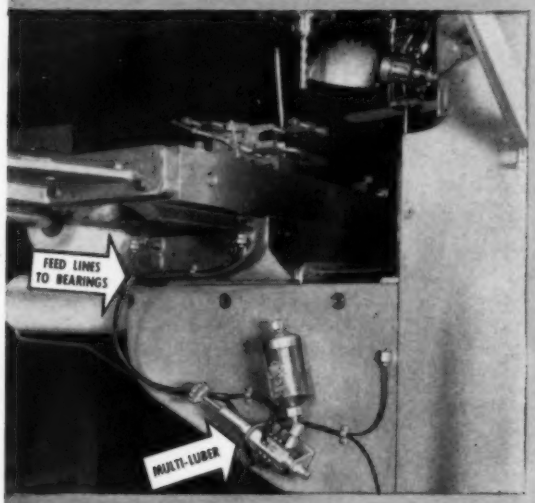
Compared to a year ago, however, total contracts were down 24 percent, with public work down 20 percent and private contracts lower by 30 percent.

The public sector accounted for 59 percent of contracts let in January. By far the largest increase, 280 percent, was in earthwork, irrigation, and drainage projects. The $98,300,000 Lewiston power plant at Niagara Falls was responsible for most of the increase. But even with this gain the total was 3 percent below that of one year ago.

Three big projects helped boost public housing contracts 108 percent above December to $88,000,000: a Capehart housing contract for $19,200,000 in Florida, another for $16,600,000 in South Carolina, and a $10,300,000 development in Chicago. Public housing was ahead of January 1957 by 38 percent.

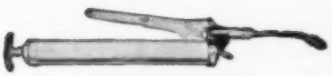
• This International 65 Payhauler requires only 11 minutes for loading, hauling, dumping, and return on a 1½ mile haul, averaging 20 tons per load. Operation is at the Limestone Quarry Corporation near Buchanan, Virginia. The off-highway International Payhauler is used for hauling overburden and also calcium limestone loaded here by Lorain model L-85, 2-cu. yd. shovel.

Wherever you need to apply lubricants ...choose from the complete line of *Lincoln* LUBRICATING EQUIPMENT



Manually operated Lincoln Multi-Luber System serves all bearings on a Bridgeport vertical boring mill. Assures application of the right lubricant, in the right quantity, without shutting down machine. Lincoln offers a complete selection of 36 Systems to meet every application. Systems shown can also be vacuum or air-operated.

The solution to any lubricant application problem . . . whether it's automated production lines or a low-cost automatic system for original equipment . . . is as *near* as your local Lincoln Industrial Distributor. Select from the most complete line on the market . . . from ball-in-top grease fittings to a complete, automatic centralized lubrication system. You'll find Lincoln equipment the right answer for lowering operating costs while you step up production.

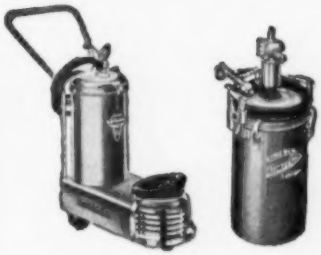


GREASE GUNS
(Heavy Duty Steel Construction)
Lube Capacities from 16 oz. to 32 oz.

GREASE FITTINGS
(All types and Thread Sizes)
From Hydraulic Ball-In-Head to Self-Tapping

POWER-OPERATED DRUM PUMPS
(For Original 120 lb. or 400 lb. Drums)
Complete selection of Air-Motors and Pump Tubes

MATERIALS DISPENSING SYSTEMS
(Power Operated for Pole, Spray or Flo Gun Applications)
Complete Systems for Original 400 lb. Drums, or 5 gal. Packages

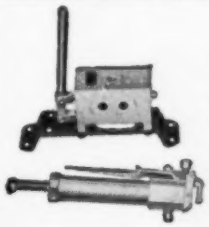


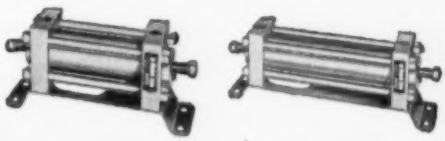
PORTABLE POWER LUBRIGUNS
(Electric or Air Operated)
Lube Capacities from 30 lbs. to 60 lbs.

HOSE REELS
(For Grease, Oil, Air and Water Services)
Heavy Duty, spring actuated.

BUCKET PUMPS
(Portable-Steel Construction)
High and Low Pressure Models.

POWER-OPERATED TRANSFER PUMPS
(For Transferring Lubricants and Fluids From Original Drums)
Empties 55 gal. drum of S.A.E. 30 oil in two minutes.





MEASURING VALVE SYSTEMS
(Foot or Hand Actuated—Any Capacity)
For Injecting Metered Quantities of Lubricants or fluid materials on Assembly Lines.

Simplify specification and purchasing . . . write for new Lincoln Catalogs: Centralized Lubrication Systems, No. 80-1; Push-button Power Lubrication Systems, No. 811R; Equipment for Productive Maintenance of Industrial Machinery, No. 64; Power-Operated Materials Dispensing Systems, No. 41.

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Marquette Consolidates—Absorbs Sales Subsidiaries In New Regional Setup

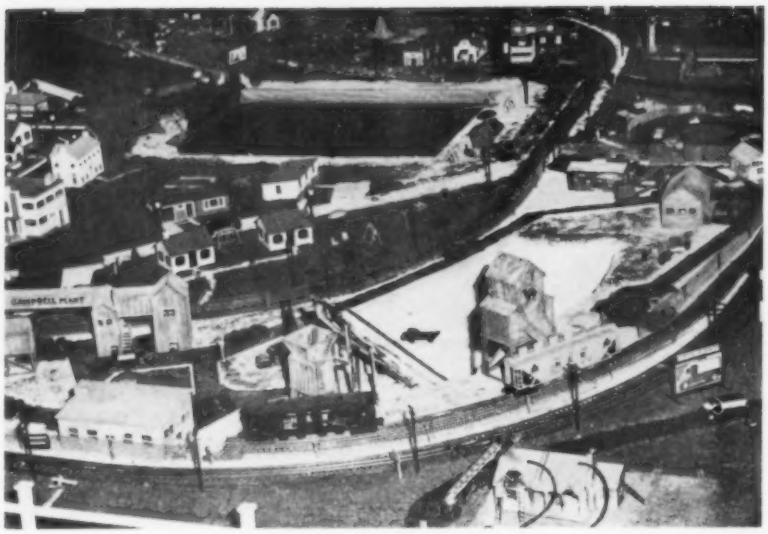
Effective March 1, Marquette Cement Manufacturing Company, Chicago, Ill., will absorb three of its five cement sales subsidiaries wholly within the Marquette organization and at the same time will consolidate over-all sales management under two regional sales managers.

The Marquette subsidiaries to be dissolved are the Cumberland Portland Cement Company, Chattanooga, Tenn., the Hermitage Portland Cement Company, Nashville, Tenn., and the Superior-Marquette Cement Company, Columbus, Ohio. The sales organization and all personnel of the firms will be retained. Only the brand and office identity will be changed to that of the parent company.

The two newly-appointed regional sales managers who will take office at the time of the consolidation are R. Y. Williams and A. W. Hicks. Mr. Williams, formerly sales manager of the central division, will be in charge of all northern divisions of the company. Mr. Hicks, former assistant director of sales, will manage all southern divisions.

A. J. McElrath, former sales manager for Hermitage, was appointed sales manager for the entire area served by the Hermitage and Cumberland divisions, with headquarters in Marquette's Nashville office. P. T. Crownover, vice-president and sales manager for Cumberland, will retire after 37 years with the organization.

Henry J. Auer, sales manager for the metropolitan Chicago area, extended his supervisory duties over the central division when its former chief, R. Y. Williams, assumed his new post as regional sales manager.



● The calcite plant and new 800-ft. Texas belt conveyor of Harry T. Campbell Sons' Corporation, Towson, Md., are featured prominently in the foreground of the 16- by 24-ft. Christmas garden built to scale by the officers and men of the Towson firehouse during their off time. The project took two months to set up, and it was estimated that 10,000 persons saw the display during the month it was on view.

Heavy Construction Activity Rises 17 Percent in February

Heavy construction contract awards rose for the second consecutive month in February. In that month the $1,170,000,000 in awards was 17 percent above the January weekly rate. The volume of private contracts, at $613,000,000, led the January weekly rate by 47 percent, with every type of private construction expanding by significant percentage. The cumulative two-month total of $2,400,000,000, however, is 21 percent below the same period of last year.

Federal work also continued to gain, and February contracts totaled $137,000,000, or 36 percent over the January rate. But the 13 percent drop in state and municipal activity, to $425,000,000, offset part of the gains scored in other sectors. Both private and public awards fell short of last year's comparable figure, although some types of work showed increases.

Industrial building awards reached $230,000,000 in February, topping all types of contracts.

R. Y. Williams

A. W. Hicks

H. J. Auer

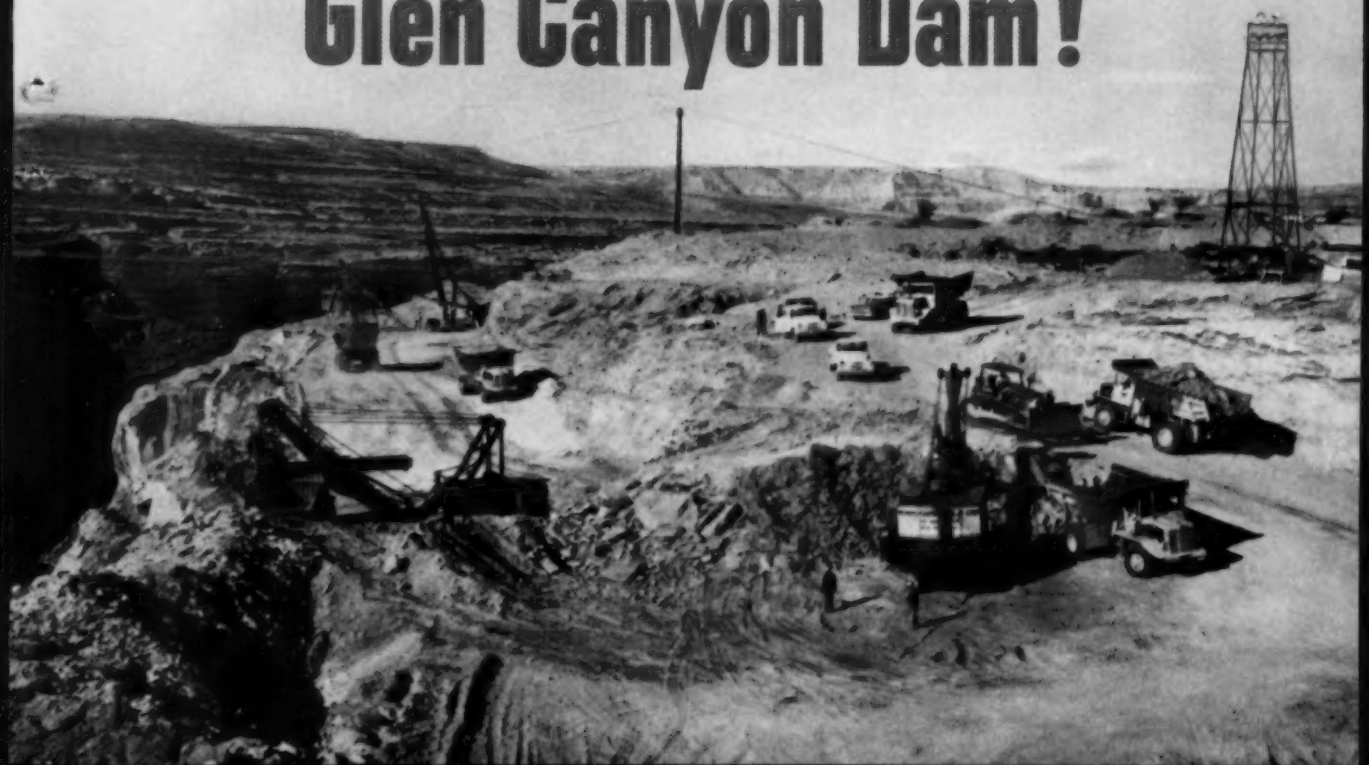
Lehigh Portland Cement Co. Opens Sales Office in Florida

The Lehigh Portland Cement Company, Allentown, Pa., has opened a district sales office in the No. 1 Miami Building, Dupont Plaza Center, Miami, Fla., to serve customers of its new plant under construction in that city.

William A. Mercer, formerly of the Minneapolis (Minn.) sales office, has been appointed district sales manager for the Miami district. R. J. Siegfried, formerly of the Birmingham (Ala.) office, is now assistant to Mr. Mercer.

Enter 33 on card, page 101 →

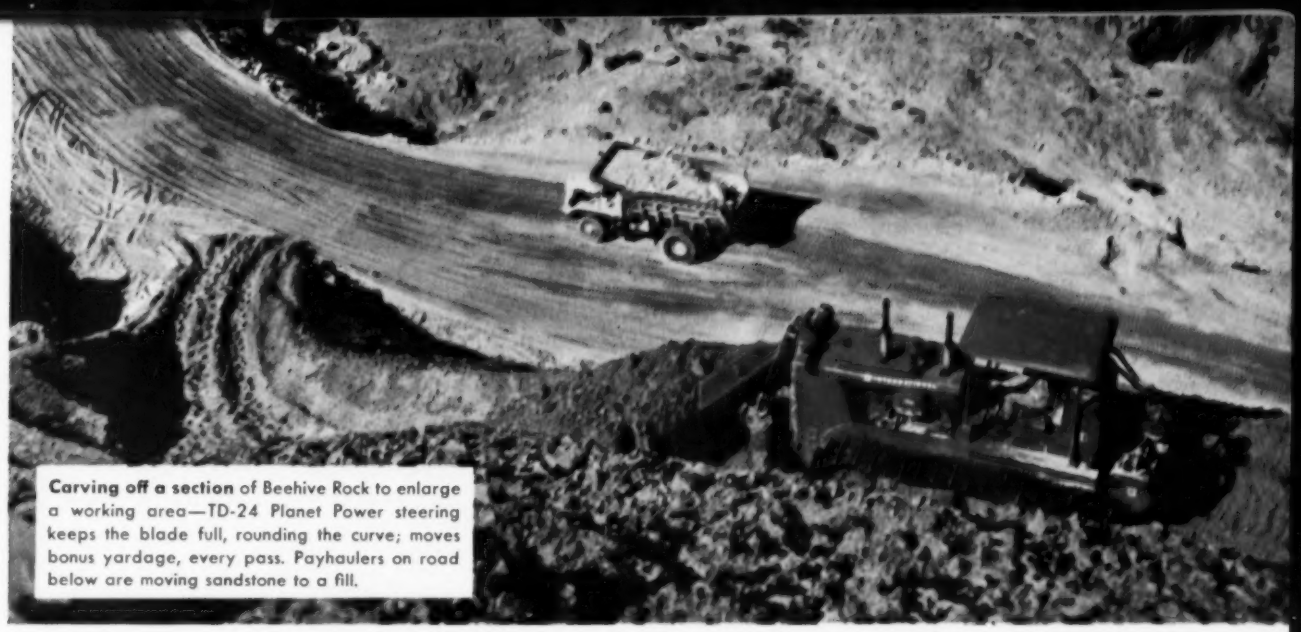
Merritt-Chapman & Scott mobilizes International® fleet to build colossal Glen Canyon Dam!



Noon time is inspection time as Merritt maintenance men, using International welder and shop trucks, roll up to Marion power shovel for fast, on-the-job service.

$108 million contract crawlers, haulers,

"95" Payhauler fleets keep busy on both sides of the 700-foot-deep canyon. These three units are hauling shovel-loaded rock from spillway excavation on the huge Glen Canyon Dam project.



Carving off a section of Beehive Rock to enlarge a working area—TD-24 Planet Power steering keeps the blade full, rounding the curve; moves bonus yardage, every pass. Payhaulers on road below are moving sandstone to a fill.

rolls on schedule with International® trucks and service!

8-passenger International Travelall, with hill-climbing four-wheel-drive, transports engineers and surveying equipment over rough terrain right to the dam site.

Here a rugged International truck with boom rig is used by electrical linemen to set up important transmission lines on the east side of the Colorado River.

On-the-spot maintenance. International shop truck moves in as shovel takes "fuel break" from International cab-forward tanker.

Big capacity. Six-wheel heavy-duty International truck with 5,000-gallon tank sprinkles water for compaction of road base.

Ready for any emergency. Merritt medical crews use International Travelall ambulances, complete with oxygen and first aid equipment, to provide mobile first aid. One stands by on each side of the river.

MERRITT-CHAPMAN & SCOTT CORPORATION is shooting to complete its $108,000,000 Glen Canyon Dam contract—biggest competitively bid job ever awarded to a single contractor—well ahead of the specified seven-year limit. A big fleet of International equipment helps keep this huge Bureau of Reclamation project on the Colorado River in Northern Arizona rolling at record pace.

Planet Power-steered TD-24 crawlers prove the worth of full-time live power on both tracks—blading bonus loads 'round the curves. Grade-beating "95's" high-balling rock show why a load-and-road-matched Payhauler® fleet—bonus-powered with turbo-charged diesel engines—belong on this tough, high-altitude job. International trucks are here, there, and everywhere—handling a multitude of different material, equipment, and personnel-carrying assignments.

And complete International parts and service is minutes close to insure high performance availability of every International machine.

Making ready for power. Conventional International truck with engine-driven auger sinks holes for transmission lines.

Track-roller lubrication of the TD-24's only needs to be done each 500 working hours. A cab-forward International truck, provides an efficient, mobile "service station." This compact International was chosen for exceptional maneuverability.

Prompt, performance-backing International service ... company and distributor... *keeps 'em rolling!*

The complete service resources for which International is world-famous are on the job for Merritt-Chapman & Scott—to help keep all International equipment rolling and producing!

It makes no difference that the job is remotely-located and 125 miles from the nearest rail-head. International, the distributor, and the dealer concerned have augmented existing parts stocks and facilities—have set up supply channels that assure on-the-spot parts availability.

Specialized distributor and company servicemen are so promptly available it's as convenient as a "down-the-street" service department.

YOU CAN HAVE THIS SAME big-capacity, specialized International performance—wherever you operate and on whatever scale—and with top performance-backing company, distributor and dealer service. See your International dealer or distributor for a demonstration of the construction equipment and motor trucks you need for high-balling your next job!

International Harvester

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Motor Trucks . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines.

Louisville Cement Co. Plans $3,000,000 Expansion At Speed, Ind., Operation

A $3,000,000 expansion program at Speed, Ind., will be undertaken by the Louisville Cement Company, Louisville, Ky., this year.

Nearing completion is the installation of a 390-cu. ft. kiln. Cost of the kiln is $1,000,000.

The second major project is the construction of 12 new cement storage silos costing more than $1,650,000. The contract for construction has been awarded to the Macdonald Engineering Company, Chicago, Ill.

Each silo will be 30 ft. in diameter and 160 ft. in height, with a capacity of 205,000 bbl. They will be so arranged that both cars and trucks may be loaded in bulk at separate stations, from any of the silos. In addition, there will be four packing stations below the silos which will package cement to vehicles.

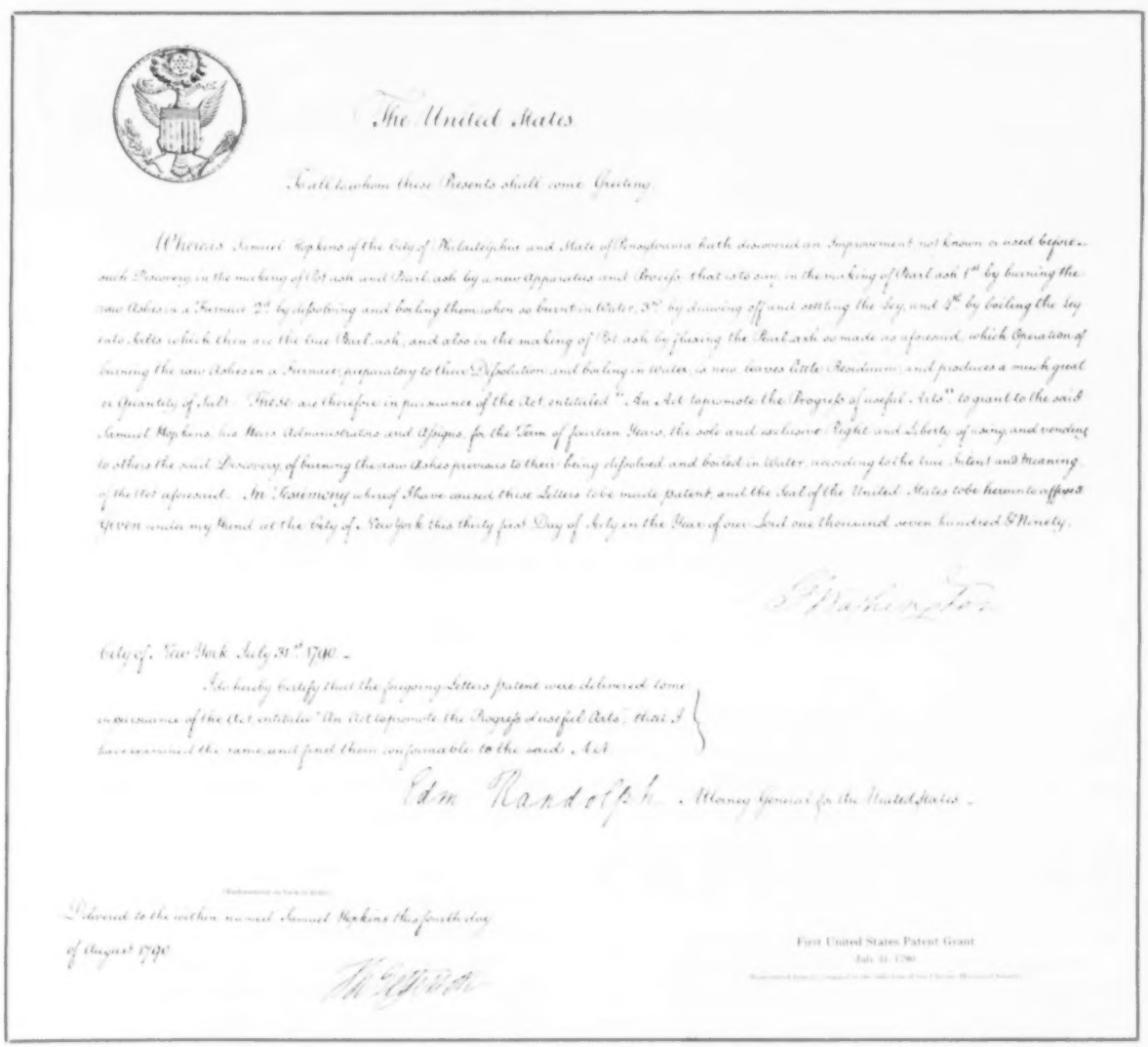
The Hagara and Snell gravel pit operation on the Wynooche River, Wash., has been sold to Graystone of Grays Harbor, Wash. Products are used as concrete aggregate, in highway construction, and as fill. William B. Judah will be in charge of the pit and Jack Carson will be plant superintendent.

● **This is the first United States patent; it was granted in 1790 to a nonmetallic operation for processing potash and "pearl ash."**

Celilo Sand-Gravel Setup Slated for Expansion Into $1,000,000 Operation

A $250,000 dredging operation was started recently by the Celilo Sand and Gravel Company, Vancouver, Wash., in the Dallas Dam reservoir area.

The work will be expanded to a $1,000,000 venture this summer by the addition of a rock-crushing plant, to be located downstream. Material is being removed at the rate of 50 tons per 8-hour shift from the 200-acre underwater bed, which lies under 5 to 25 ft. of water. The sand and gravel is shipped in 1,000-ton bargeloads to Vancouver. This gravel bed is under lease from Seufert Bros., who purchased the land in 1896.



The United States

To all to whom these Presents shall come Greeting

Whereas Samuel Hopkins of the City of Philadelphia and State of Pensylvania hath discovered an Improvement not known or used before such Discovery in the making of Pot ash and Pearl ash by a new Apparatus and Process that is to say, in the making of Pearl ash 1st by burning the raw Ashes in a Furnace 2d by dissolving and boiling them when so burnt in Water, 3d by drawing off and settling the Ley and 4th by boiling the Ley into Salts which then are the true Pearl ash, and also in the making of Pot ash by fluxing the Pearl ash so made as aforesaid, which Operation of burning the raw Ashes in a Furnace preparatory to their Dissolution and boiling in Water, as now leaves little Residuum and produces a much greater quantity of Salt. These are therefore in pursuance of the Act entitled "An Act to promote the Progress of useful Arts" to grant to the said Samuel Hopkins his Heirs Administrators and Assigns for the Term of fourteen Years, the sole and exclusive Right and Liberty of using and vending to others the said Discovery of burning the raw Ashes previous to their being dissolved and boiled in Water according to the true Intent and Meaning of the Act aforesaid. In Testimony whereof I have caused these Letters to be made patent, and the Seal of the United States to be hereunto affixed. Given under my Hand at the City of New York this thirty first Day of July in the Year of our Lord one thousand seven hundred & Ninety.

City of New York July 31st 1790.

I do hereby Certify that the foregoing Letters patent were delivered to me in pursuance of the Act entitled "An Act to promote the Progress of useful Arts" that I have examined the same and find them conformable to the said Act.

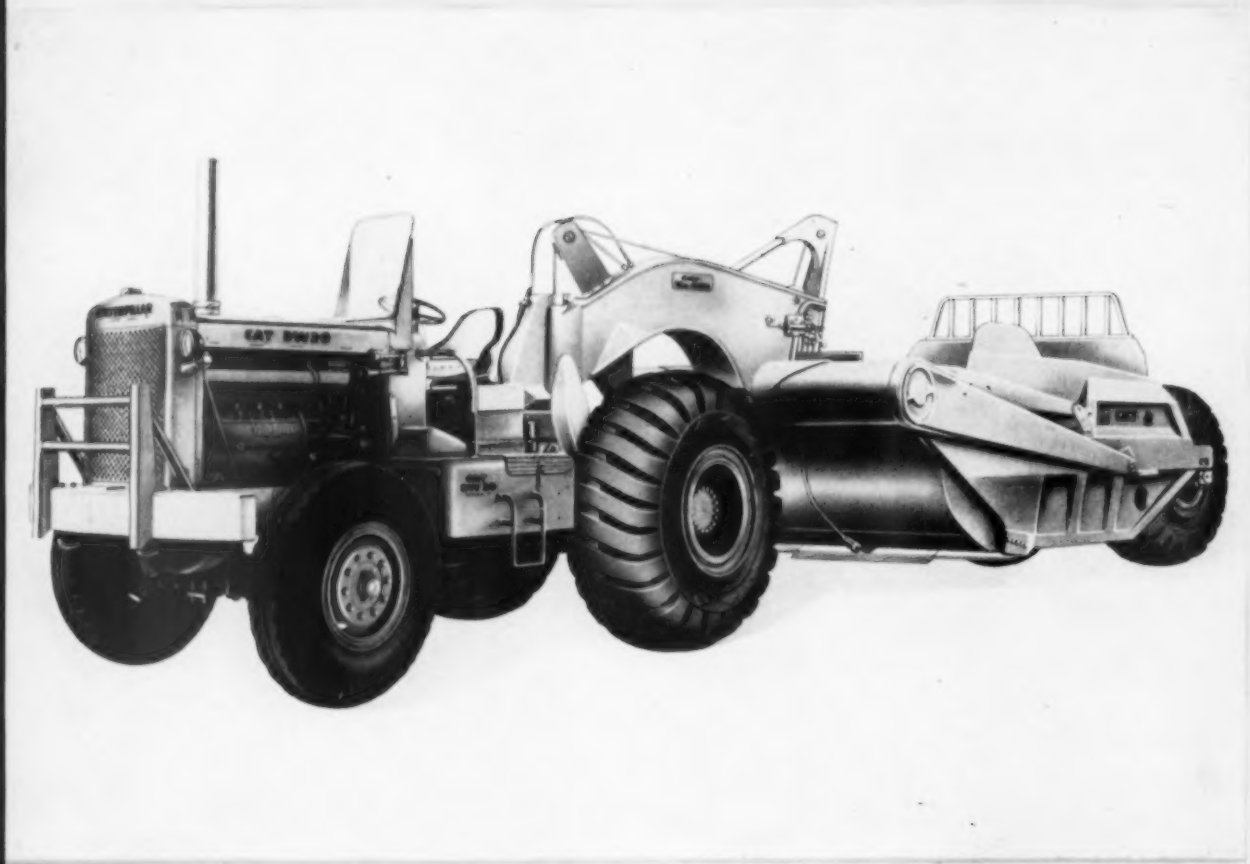
Edm Randolph Attorney General for the United States.

Delivered to the within named Samuel Hopkins the fourth day of August 1790

First United States Patent Grant
July 31, 1790

HERE THEY ARE!

DW20 and DW21 WITH



DW20
(SERIES F)

New HP—320 (maximum output)!
New Torque—28% torque rise!
New Speeds—up to 35.8 MPH!

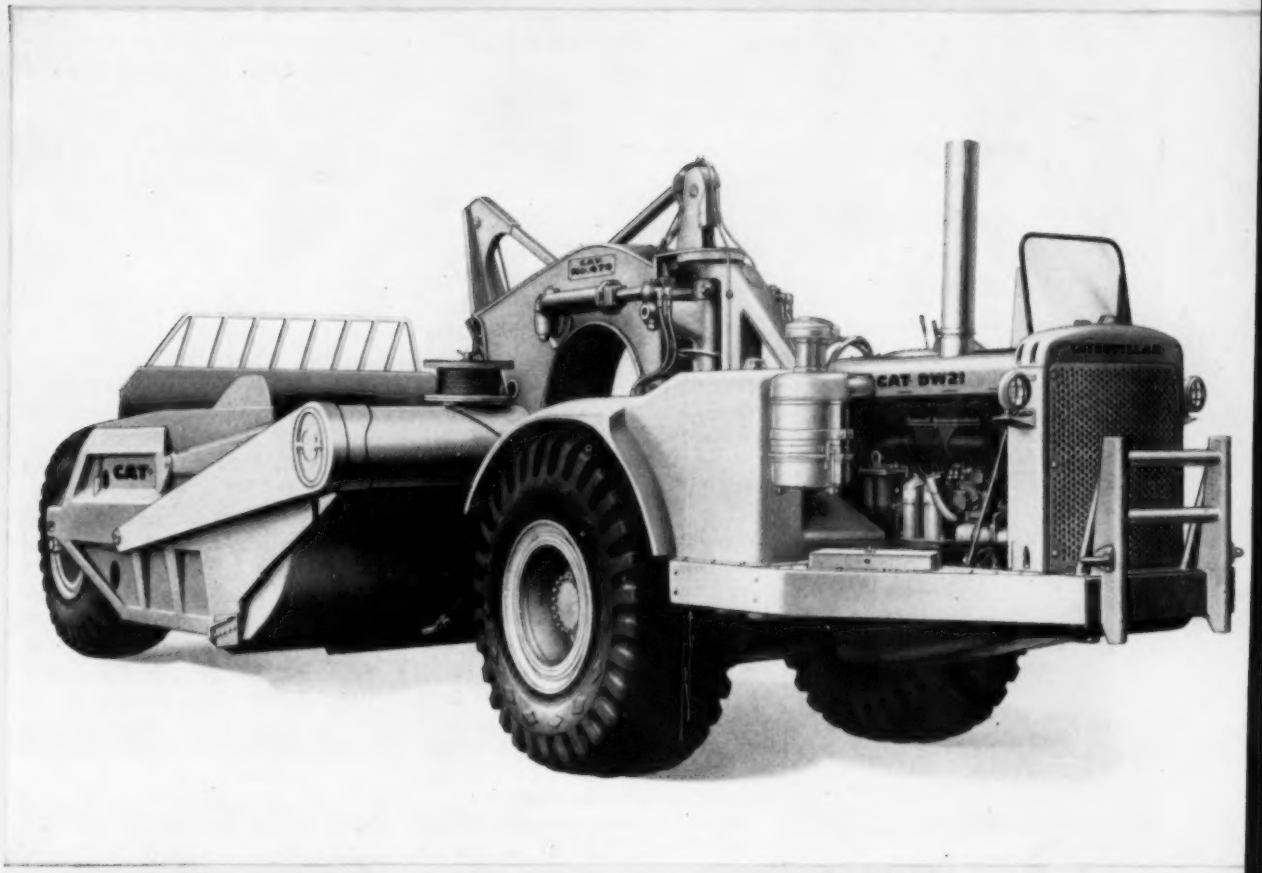
Powered with a brand-new SUPER-TURBO Engine, these big Caterpillar rigs are faster, more powerful than ever. Horsepower of both the DW20 and DW21 is increased to 320. At equal rimpulls, speeds are 10% greater, and torque rise is more than double compared to the previous models. Now you can move earth faster and easier—and still have the dependability for which Cat equipment is famous.

Behind the new performance of the new DW20 (Series F) and DW21 (Series D) is their new SUPER-TURBO Engine. This amazing power plant incorporates a new concept in diesel engine turbocharging. Its heart is a revolutionary air induction system, unique in earthmoving machines . . . and another Caterpillar first.

This system allows use of more of the Turbocharger's potential than was possible before. Results: twice as much torque rise, higher horsepower, better acceleration and gradeability.

But more important, these results translate into faster cycles, greater production and more profit—*for you.*

NEW INCREASED HORSEPOWER



DW21
(SERIES D)

New HP—320 (maximum output)!
New Torque—28% torque rise!
New Speeds—up to 22.6 MPH!

Add to these DW20 and DW21 power advantages all the design features of Caterpillar LOWBOWL Scrapers. These matched units are built to use the greatest possible loading potential of the new power in the tractors.

Higher horsepower! New torque rise! Faster working speeds! Your production will hit new highs and your costs will drop when you turn these improved rigs loose on your job.

Call your Caterpillar Dealer right now and set up a demonstration on a job of your choice. The sooner you see the powerful new DW20 and DW21 in action, the sooner you'll start getting bigger returns from *your* wheel spread.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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—First in the Industry
—First in Performance

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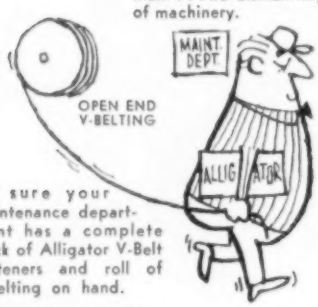
Alligator V-Belt Fasteners simplify the replacement of worn or damaged V-belting with correct size, stretch resistant OPEN-END V-BELTS — Keep costly "downtime" at a minimum . . . no dismantling of machinery.



Be sure your maintenance department has a complete stock of Alligator V-Belt Fasteners and roll of V-Belting on hand.

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- **Monel**
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December Lime Sales Dip— 1957 Sales Down, Value Steady

Domestic sales of open-market lime (624,226 short tons) in December, 1957, decreased 10 percent from the previous month's total, according to reports to the U. S. Bureau of Mines, by plants producing 10,000 or more short tons per year.

The 1957 lime sales totaled 8,964,539 short tons, compared to 9,177,428 tons in 1956, a 2 percent decrease.

Reports on lime sales by types and major uses, indicates that consumption was less in 1957 than in the preceding year, by all classes of users. Preliminary percentages of the apparent 1957 lime consumption decline, are: agricultural lime—down 3 percent, building lime—down 5 percent, chemical and industrial lime—down 2 percent, and refractory lime—down 3 percent.

In spite of these apparently general reductions in tonnages, the total value of 1957 open-market lime sales may equal or slightly exceed 1956, by virtue of 1957 price increases. According to *Oil, Paint, and Drug Reporter*, car lot prices per ton in the New York City area, with freight equalized with the nearest producing point, were raised twice during the year, on February 11, and again on September 2.

Reported prices, including freight, were increased $1.67 a ton on quicklime, hydrated lime, and spray lime. Bulk quicklime rose from $20.46 to $22.13 (plus 8 percent), bulk hydrated lime from $21.96 to $23.63 (plus 8 percent), and bagged spray lime from $25.96 to $27.63 (plus 6 percent).

New York Trap Rock Corp. Acquires Towing Concern

New York Trap Rock Corporation, New York, N. Y., has purchased the Cornell Steamboat Company, which has provided tug service on the Hudson River for Trap Rock's deck fleet of 215 barges.

Included in the transaction were all the capital stock, towing franchises, and the 80-ft. 600-hp. tug *Rocktow*. Trap Rock will modernize towing methods to cut travel time to the market area in New York City in half. Larger and more powerful tugs in the 1,600 hp. class will be chartered by Trap Rock in this stepped-up transportation program.

C. W. Spangenberger will continue as president of the subsidiary. Other officers are Albert A. Tangredi, vice-president; John Summer, secretary; and Edwin H. Woolley, assistant treasurer. J. D. Fackenthal; W. P. Foss III (president, N. Y. Trap Rock); G. M. Boyle; and Messrs. Spangenberger and Summer constitute the board.

J. EDWARD SINGLETON, 82, vice-president of the Glens Falls Portland Cement Company, Glen Falls, N. Y., died recently in Arizona.

Lime Sold by Producers[1] in the United States, in Specified Periods of 1956-57, by Types and Major Uses in Short Tons.

	November	December		January-December	
	1957	1957	1956	1957	1956
By types:					
Quicklime	550,933	503,154	[2]642,031	7,112,030	[2]7,286,459
Hydrated lime	139,557	121,072	122,781	1,852,509	1,890,969
Total lime[3]	690,490	624,226	[2]764,818	8,964,539	[2]9,177,428
By uses:					
Agricultural:					
Quicklime	11,624	6,093	6,912	86,304	88,575
Hydrated lime	6,787	4,091	5,226	135,669	139,738
Total	18,411	10,184	12,138	221,973	228,313
Building:					
Quicklime	12,433	8,183	8,696	171,511	155,893
Hydrated lime	68,675	52,108	56,346	894,771	966,934
Total	81,108	60,291	65,042	1,066,282	1,122,827
Chemical and other industrial:					
Quicklime	355,541	340,377	[2]404,345	4,559,468	[2]4,680,045
Hydrated lime	64,095	64,873	61,215	822,069	784,297
Total	419,639	405,250	[2]465,560	5,381,537	[2]5,464,342
Refractory (dead-burned dolomite)	171,332	148,501	222,078	2,294,747	2,361,946

[1] Also includes a small quantity of captive tonnage. The monthly canvass excludes the output of plants producing less than 10,000 tons a year. [2] Revised figure. [3] Approximately 60 percent of lime produced is high-calcium and 40 percent high-magnesium.

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"Euclids give us good service with low maintenance and keep our hauling costs at rock bottom"

LOUISVILLE CEMENT COMPANY, SPEED, INDIANA

Six 22-ton Euclid Rear-Dumps are hauling mortar stone, Portland cement stone and overburden at the Speed, Indiana, quarry of Louisville Cement Company. Working an 8 hour shift, three of these "Eucs" handle 400 tons per hour on hauls ranging from 1000 to 3000 feet. The wide bodies with struck capacity of 15 yards are loaded by a 4½ yd. shovel in four passes. Two other units are loaded by a 2½ yd. shovel. With loaded speeds up to 30 mph, they average 80 tons per hour on a 2 mile one-way haul. In addition, three of these "Eucs" work a second shift hauling overburden.

Louisville Cement Co., like hundreds of mine and quarry operators, has found that Euclid equipment moves more tons at lowest operating and maintenance cost. Dependable Euclid performance is the result of advanced engineering, rugged construction and almost 25 years experience with off-highway haulers.

To be sure you have the most economical hauling equipment, get a production and cost estimate from your Euclid dealer on the model best suited to your work — you'll find there are a lot of reasons why ***Euclids are your best investment.***

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

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Consolidated Quarries Names Austin Chairman, Severinghaus President

At the annual meeting held on March 1, directors of the Consolidated Quarries Corporation, Decatur, Ga., elected G. A. Austin chairman of the board and Nelson Severinghaus president.

In 1926 Mr. Austin joined the

G. A. Austin

enterprises of A. Fillmore Hyde, who operated an underground quarry in north Georgia. From this operation the Consolidated Quarries Corporation was formed in 1928, with Mr. Austin serving as general manager and directing the construction and operation of the Rock Chapel plant near Atlanta. In 1935 he was elected president of the organization, the position he has held until his recent promotion.

Active in the affairs of the National Crushed Stone Association, Mr. Austin served as its president in 1946-47.

Mr. Severinghaus, also a member of Consolidated Quarries since its inception, joined the firm in 1928 as superintendent. In 1943, he was promoted to general manager, and in 1945 became a vice-president and general manager. He is presently a regional vice-president for the N.C.S.A. and a member of its executive committee.

Nelson Severinghaus

American Potash & Chemical, Lindsay Chemical to Merge

Directors of American Potash and Chemical Corporation, Los Angeles, Calif., and Lindsay Chemical Company, Chicago, Ill., have approved the merger of Lindsay in American Potash. The decision is subject to the approval of shareholders of both companies.

Lindsay Chemical produces rare earth chemicals and thorium compounds, American Potash furnished more than 60 chemicals for industry, agriculture, and national defense.

Vulcan Materials Co. Names Monaghan Jr. Vice-President

Bernard A. Monaghan Jr. has assumed the duties of a newly-created post, executive vice-president of Vulcan Materials Company, Birmingham, Ala., effective April 1. He will be headquartered at the company's new main offices in Office Park, Birmingham.

Mr. Monaghan has worked with Vulcan Materials as counsel and consultant for many years.

Net sales of the Ruberoid Company, New York, N. Y., were $81,073,947 and net income $4,808,267, or $3.25 per share, for the year ended December 31, 1957. During the previous year sales were $76,359,632, and income $4,292,143, or $2.90 a share.

D. L. Marlett

Bright Future for Perlite Predicted at Institute Meeting

Highly favorable long-term growth prospects in the construction and horticultural fields assure a bright future for the perlite industry, it was reported by Richard J. O'Heir, secretary-treasurer of the Perlite Institute at the international trade association's ninth annual meeting held recently in Fort Lauderdale, Fla.

Representatives from perlite producing companies from 14 states, Cuba, and Mexico attended the meeting. Among the encouraging trends cited were these: increasing use of fire-retardant perlite plaster; growing acceptance of perlite insulating concrete for roof decks, curtain wall back-up systems, and other applications; greater usage of perlite in acoustical plaster and tile.

D. Loring Marlett, vice-president of the Mining and Mineral Products Division of Great Lakes Carbon Corp., was elected president of the institute. The new vice-president is Norman E. Braun, operations manager of the Cleveland Gypsum Company, Cleveland, Ohio.

Canada Cement Company, Ltd., Montreal, Que., has reported a net income of $13,806,510 or $2.64 per common share (before taxes) for the fiscal year ended November 30, 1957. In 1956 net income totaled $13,307,014 or $2.62 a share.

New Construction Activity Declines in February, 1958 But Tops Feb., 1957, Total

New construction activity declined as usual in February, but work put in place valued at $3,100,000,000 was slightly above the previous February record set in 1957, according to preliminary estimates prepared jointly by the U. S. Departments of Labor and Commerce. The February outlays brought the total for the first two months of 1958 to $6,300,000,000 —an all-time high for the January-February period. Both private and public construction shared in the $142,000,000 gain over the first two months of 1957.

Private spending for new construction in January and February this year was up slightly from the same 1957 months (by 2 percent) to a record $4,600,000,000 total. Outlays during the two-month period of 1958 were at an all-time high for office buildings, hospitals, social and recreational buildings, and for gas and electric power utilities.

At the same time, the dollar value of new housing, which had been below year-earlier levels since the close of 1955, totaled virtually the same in the first two months of 1958 as in the like 1957 period.

These monthly estimates are determined primarily by past contract award movements, standard progress patterns and asumed normal seasonal movements.

Public construction expenditures thus far in 1958, totaling $1,700,000,000, were 4 percent above last year's all-time high for the January-February period.

Michigan Limestone Plant Wins Company Safety Award

The Conneaut (Ohio) plant of the Michigan Limestone Division, United States Steel Corporation, Pittsburgh, Pa., has won the Michigan Limestone President's Award for Safety.

The plant earned the award for operating 2,000 consecutive days, or five and a half years, without a single lost-time accident. The 2,000-day mark was officially reached December 10, 1957, and the no-accident record is still intact.

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PARALLEL SHAFT HELICAL GEAR DRIVES

1. Heavy duty, reinforced design housing for permanent alignment, rigid shaft support.
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Capacities to 1550 H.P.

★ Single, Double, Triple Reductions
★ Standard Ratios from 2.08 to 1 up to 360 to 1
★ 9 Shaft Arrangements

There's more capacity, greater stamina and longer service life built into Foote Bros. Maxi-Power Parallel Shaft Drives. Simple, balanced design, fewer moving parts, heavy duty construction, efficient lubrication and conservative ratings make Maxi-Power drives the logical choice for critical applications and severest operating conditions.

You can depend on Maxi-Power Drives to produce maximum performance with minimum attention because they're built for just that kind of service.

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From Bead to Tread!

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Offering unsurpassed traction, flotation and job-hazard protection!

Combining a far deeper, wider and huskier tread with exclusive Nygen Cord construction, the all-new General LCM promises, and produces, ever-lower tire operating costs. Engineered to provide traction and flotation beyond all comparison, the General LCM minimizes rolling resistance, powers through the toughest going to get the job done faster. Built to shrug off costly snags, cuts, and bruises, the General LCM is the toughest, brawniest workhorse tire in the field. One demonstration will convince you of its tremendous power and capabilities.

Test it on your toughest job and watch it out-perform anything on wheels!

THE GENERAL TIRE & RUBBER CO.

AKRON, OHIO

New York Trap Rock's helicopter performing an unusual feat—freeing a runaway beached gravel barge.

N. Y. Trap Rock's Chopper Makes Headlines Again—This Time as Barge Mover

New York Trap Rock's helicopter has served many useful purposes (see PIT AND QUARRY, July, 1957, p. 191) and recently added lustre to its working record through a new application—moving barges on the Hudson River.

This company, which operates the largest fleet of deck cargo barges in the country, put the whirlybird into service a few weeks ago to retrieve a barge that had slipped its moorings, drifted four miles downstream and across the river, and then had run aground.

Shallow water precluded bringing a company tug alongside the disabled barge, which rested near the craggy shore of Croton Point. The company's 47-G Bell helicopter was called for by George Smith, marine superintendent. Pilot Bill Barolet dropped the "bird" onto the barge deck with a float nudging the starboard gunwale, and "revved up." With this unique propulsion, the barge soon pulled free, and was eased out toward the waiting tug, with which it was taken under tow. According to an astonished tug captain, this was the first cruise of a self-propelled barge that he had ever witnessed.

39th A.G.C. Convention Held in Dallas, Tex.

AT the close of the 39th annual convention of the Associated General Contractors of America, held at the Statler-Hilton hotel, Dallas, Tex., February 10-13, the new general officers, and those of the three occupational divisions of the association, were announced.

Fred W. Heldenfels Jr., prominent Texas highway contractor, was installed as president of A.G.C., and James W. Cawdrey was sworn in as vice-president. Mr. Heldenfels is a partner in the firm of Heldenfels Brothers, Corpus Christi, Tex. Mr. Cawdrey is a partner in Cawdrey & Vemo, a building construction firm of Seattle, Wash.

Chairman-elect of the building contractors' division is Ira H. Hardin, Ira H. Hardin Co., Atlanta, Ga. The new vice-chairman of that division is Robert W. Long, Long Construction Co.

Max C. Harrison, Harrison Construction Co., Pittsburgh, Pa., was named chairman of the highway contractors' division, along with J. P. Gibbons, Gibbons & Reed Co., Salt Lake City, Utah.

The new chairman of the heavy construction and railroad contractors' division is Charles L. Harney, Chas. L. Harney, Inc., San Francisco; and Howard H. Sturdy, Dravo Corporation, Pittsburgh, was named vice-chairman.

During the convention the contractors were told that building construction volume is expected to increase about 5 percent this year—exclusive of military construction. This point was made in a report presented by Welton A. Snow, manager of the building contractors' division. Mr. Snow indicated further that a rise of 68 percent in public housing is expected during 1958, while private residential construction is expected to increase about 6 percent.

According to James D. Marshall, executive director, A.G.C., the dollar volume of the construction market is expected to expand during 1958 to a potential market of $68 billion. During 1957, the volume was more than $65 billion, he said, representing more than 15 percent of the country's gross national product, as well as being responsible—directly and indirectly—for about 15 percent of the nation's total employment.

Bertram D. Tallamy, federal highway administrator, said that a total of about $3.7 billion in construction contracts on the various phases of the highway program will be in force by late summer of this year. He estimated that the program would give employment, during the peak of the construction season, to at least 250,000 workers, both on and off the job sites. The above dollar figure would include $1.6 billion on the interstate system, and $2.1 billion on the ABC systems. The administrator added that while some states have advanced faster than others for various reasons, the federal highway program is, nationally, on schedule.

National Safety Council Issues 2 Safety Booklets

The National Safety Council has two new publications available for industry—one for employees, the other for foremen. They are, *Rules for Safety* and Book 8 in a series of *Five Minute Safety Talks for Foremen.*

Rules for Safety contains 40 pages covering accident prevention pointers. The booklet gives safety rules for using power tools, stacking material, lifting, and carrying.

Free copies of descriptive brochures on the literature are available from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Get the inside information on why Hamilton belts are best

When you see what goes into a Hamilton conveyor belt you can understand why hundreds of sand, gravel and quarry operators are hauling top-capacity loads for longer periods with virtually no loss of time or maintenance. Here's the inside information!

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Check all other vibrating screens of comparable quality and you'll go Overstrom for *performance*, for *"staying power"*, and for *economy* in performance and investment. Whether for light, medium, or heavy-duty work, Overstrom Vibrating Screens are noted for *rugged simplicity* in construction and operation.

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A SUBSIDIARY OF SUTTON, STEELE & STEELE, INC., DALLAS, TEXAS

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Paul M. Nauman

Paul M. Nauman Retires After 50 Years in Industry

Paul M. Nauman, manager of Dubuque Stone Products Company, Dubuque, Iowa, retired recently after a 50-year business career.

He began his career in the industry by assuming the co-management of Eagle Point Lime Works, the former name of the present Dubuque Stone Products Company. At one time he was president of the Iowa Agricultural Limestone Association.

Bestwall Gypsum to Finance Building of Port in Georgia

Bestwall Gypsum Company, Ardmore, Pa., has signed a contract to underwrite city and county bonds to finance a $1,250,000 dock. This facility will handle bulk material shipping with the city of Brunswick, Ga., the Brunswick Port Authority, and Glynn County of Georgia. Under the terms of the contract, Bestwall will pay off the bonds over a 30-year period.

After two years of dock operations, the city and county will in return pay for unloading 200,000 tons of gypsum rock annually from ships that will supply a new Bestwall plant.

L. E. TOWNSEND, manager of Armco Steel Corporation's Piqua quarries, will be responsible for all of Armco's operations in Piqua, Ohio.

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HP RANGE:
½ to 50 hp

RATIOS:
4:1—14:1—24:1 (or 20:1)

OUTPUT SPEED RANGE:
420 to 5 rpm

TORQUE RATINGS:
up to 31,500 lb-in

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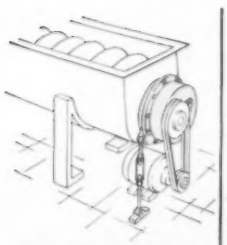
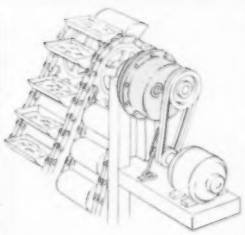
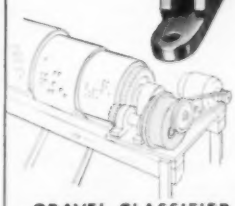


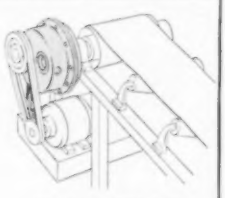
SCREW CONVEYOR



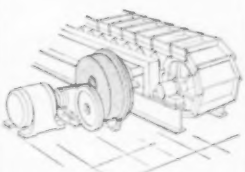
BUCKET ELEVATOR



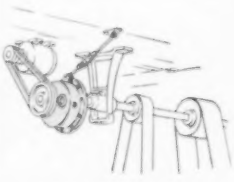
GRAVEL CLASSIFIER



BELT CONVEYOR



APRON FEEDER



LINE SHAFTING

FALK
ALL STEEL Shaft Mounted Drive

. . . Steel can "take it"!

STEEL frame . . . of fabricated plate supports all rotating elements—provides double the ability of iron to maintain vital alignment of revolving elements, even under shock load or external impact.

STEEL housing . . . will not fracture, serves only as protective cover and lubricant reservoir. Therefore, lubricant supply is safeguarded.

STEEL tie-rod and straddle-mounted tie rod brackets . . . are fastened to heavy steel frame by steel bolts in double shear.

DELIVERIES TO MEET YOUR REQUIREMENTS

Off-the-shelf delivery **from your Authorized Falk Distributor.** ***Shipment from factory or warehouse stocks*** **within 72 hours after receipt of your order.**

Write for Bulletin 7100

THE FALK CORPORATION, 3001 W. CANAL ST., MILWAUKEE 1, WIS.
Representatives and Distributors in Most Principal Cities
Manufacturers of Quality Gear Drives and Flexible Shaft Couplings

FALK
. . . a good name in industry

WORK BULL

Instant-reversing Work Bull 1001 has ⅞ cubic yard payload capacity. Special shock-load absorber minimizes spillage of heaped loads over rough terrain. Available in both gasoline (52 hp) and diesel (47hp) models.

Low pivot points put Direct Line of Thrust below the wheel axle to place more tractive weight on drive wheels. 43° tilt back at ground level creates 5,200 pounds of breakaway power!

Sliding Lift Arms guided by telescoping tension members give the 1001 a mammoth reach when arms are raised, but maintain "close-in" workability when in digging position.

As a Fork Lift or Swinging Crane, the Work Bull 1001 unloads palletized, cubed, bagged, or bundled material, reinforcing rods, and concrete forms . . . handles screens and crushers.

Angle Dozer has 84" blade with hydraulic tilt control. It is an excellent tool for maintaining bench roads, plowing snow, recovering spillage, and other utility operations.

1001 WITH INSTANT REVERSING, 43° ROLLBACK, AND DIRECT-LINE THRUST IS UNBEATABLE IN STOCKPILING OPERATIONS!

Superior performance . . . that's what makes the Work Bull 1001 Multi-purpose Tractor Loader second to none in the loader field! Instant reversing – by simply changing your foot from one pedal to another – gives you the advantage of cost-reducing speed in stockpiling and other time-cycle operations. The same pedal also serves as an accelerator.

Torque converter automatically adjusts power between speed and load requirements.

Full-time power steering and three-spool valve are standard equipment. So is special shock-load absorber that minimizes spillage from big 7/8 cubic yard bucket . . . prevents damage to hydraulic system as you operate over rough terrain.

Roomy, comfortable seat; convenient controls; and "no blind spot" visibility reduce operator fatigue for fast, efficient production all day.

In addition to its many other features, the 1001 brings unsurpassed versatility to large-plant operations. It converts to a Fork Lift, Angle Dozer, Rotary Broom, Backhoe with its own backfill blade, Swinging Crane, Pick-Up Street Sweeper, or Scarifier! Each attachment is Power-Matched to the Work Bull so that it performs each function so well you will think it is intended for just that one purpose.

Watch a demonstration! See for yourself how this amazing new low-inventory rig will save money for you!

ALL-NEW WORK BULL FORK LIFT

The powerful, new Work Bull Fork Lift is the best rig you can buy for efficient materials handling both on and off hard surfaces!

Ten Power-Matched attachments include 48" Forks (standard), hydraulically dumping Materials Bucket, adjustable Block Tines, Side Shift, Angle Dozer, and 20' Mast Extension.

Three-spool valve is standard . . . no additional hydraulics needed for quick-change attachments. Other features include 4,000-pound capacity, fingertip controls, 8' 2" top clearance, 10' reach (20' with extension), power steering, turn brakes, two forward and six reverse speeds, adjustable counterbalance, and top-quality construction.

The Work Bull Fork Lift is a real cost cutter in any storage yard!

Get the Full Story on How to Save Manpower and Equipment Expenditures
Write for this free copy of the 28-page, fully illustrated brochure
on the complete Work Bull and Davis Line. Ask for Brochure G-4.

MASSEY-HARRIS-FERGUSON, INC.

MASSEY-FERGUSON INDUSTRIAL DIVISION

1009 SOUTH WEST ST. • WICHITA 13N, KANSAS

Adjustable Block Forks on Work Bull Fork Lift handle cubed blocks, skids, pallets, etc. Hydraulic Side Shift eliminates close-in maneuvering.

Materials Bucket attachment on Work Bull Fork Lift has 13 cubic foot struck capacity; 45° rollback for batching uniformity. Dumps hydraulically at heights to 10'.

72" Angle Dozer attachment on Work Bull Fork Lift features hydraulic tilt and elevation. Use to build and maintain storage yards and drives; also clean-up.

Mast Extension has 20' reach and 1,000-pound capacity for hoisting into high places. Fork length 36"; carriage width 40".

Enter 50 on card, page 101

pounds of breakaway power!

in digging position.

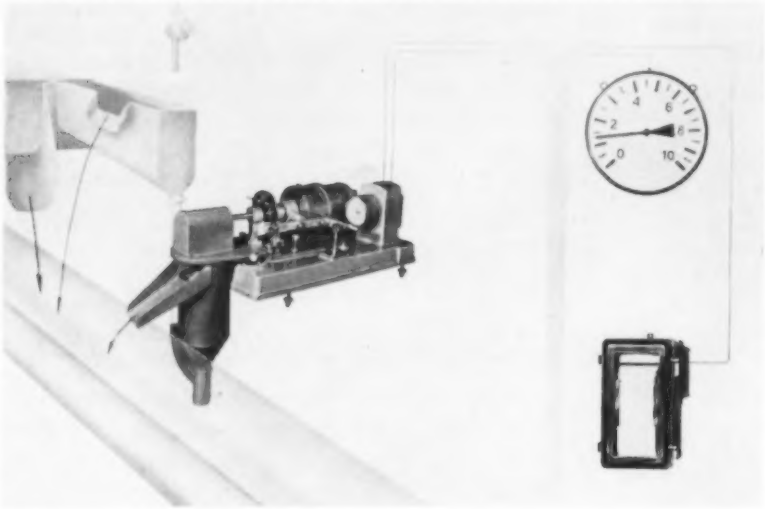
handles screens and crushers.

utility operations.

New Machinery

and Equipment

For Further Information Use Card on Pages 101-102



● C. W. Brabender Industries Inc. recently developed a Plastograph for the continuous control of cement slurry viscosity in the wet process cement industry.

The Plastograph is installed in such a manner that only a part of the main stream of the slurry is measured. The slurry enters the sensing element from below and after it has flowed through the sensing element, returns to the main stream chute from above.

The measuring principle is as follows: The sensing element is constantly rotated at 63 r.p.m. by means of a motor mounted on floating bearings. The resistance encountered by the sensing element when rotating in the slurry is expressed in opposite torque on the movable housing of the motor. This motion is transferred to a balance system by means of an arm fixed to the housing. The higher the torque, the greater is the linear deflection of the lever. The balance system is connected with a torque scale, which converts torque into an electrical signal for actuating a wall indicator or a strip chart recorder.

The continuous measuring and recording of cement slurry consistency gives the operator the opportunity of correcting slurry viscosity by water adjustment, thus resulting in considerable savings in subsequent dehydration cost. **(351)**

● Production of a horizontal vibrating screen, called the Screen Master, has been announced by the Universal Engineering Corporation.

Design of the screen features cylindrical arms, called drag links, at each corner of the screen, which connect the screen box to the frame. Coil springs join the frame to the screen box at right angles to the drag links. The drag links are yoked through the frame and pivot at the bottom. The rigidity obtained by yoking the drag links is reported to provide a constant, even movement of the screen cloth.

Other design features include clamp bar with rounded edges to make radial contact with screen wire; removable feed-box side plate for easy screen replacement; hydraulic bearing removal; and interchangeable parts.

The Screen Master is available in 48 in. by 12 ft., 48 in. by 10 ft., 42 in. by 12 ft., 42 in. by 10 ft., 36 in. by 12 ft., and 36 in. by 10 ft. sizes in 3-, 2½-, and 2-deck models. **(352)**

● Wagner Tractor's 1959 line of all-purpose four-wheel-drive, four-wheel-steer tractors consists of four models—the 9, 14, 18, and 24.

Model 24, a 300 hp. unit, contains as standard equipment an insulated cab with air conditioning; radio, heater, and defroster; automatic cut-off switch for oil pressure and water temperature; temperature gauges for transmission, transfer case, differentials and engine; air clutch and brakes; and tachograph. Most of these features will also be incorporated as standard equipment in the Models 9, 14, and 18.

All models in the line are powered by Cummins diesel engines, and feature midship-mounted power divider boxes and Timken oscillation bearings. **(353)**

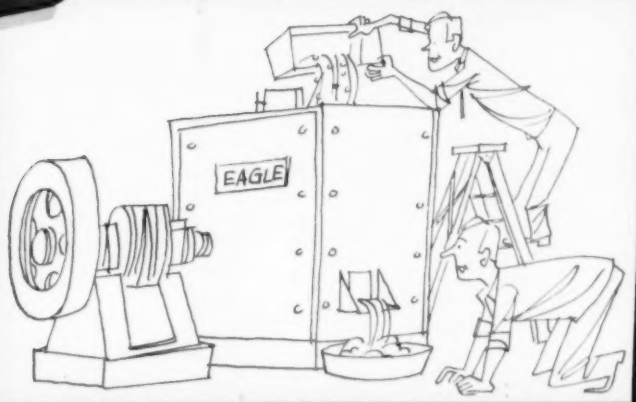
TEST REPORT

FROM

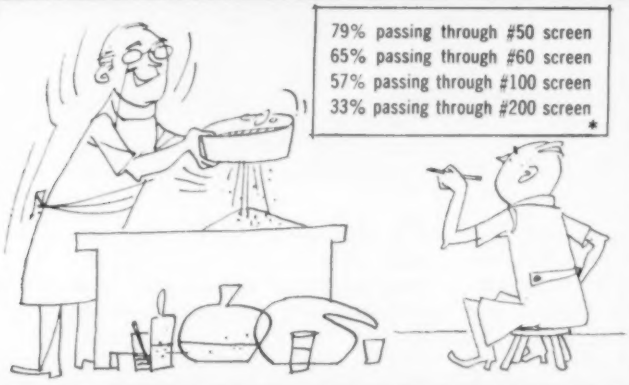
EAGLE CRUSHER CO., Inc. GALION OHIO U.S.A.

Several months ago we asked for samples of pit-run limestone (or after it had been through the primary) to put through an Eagle Cage Mill. Object: to show that you can get more production as well as a higher percentage of "Fines" with an Eagle! **Ag-lime fines bring more money!**

1 Here's what happened: Samples came in from all directions—barrels, boxes, bags, etc.... Let's see what happens in a typical test run.



2 The sample from Abbeyville Lime Company, (Abbeyville, Ala.) was first weighed and then put through the Eagle Cage Mill **once**—(single pass).



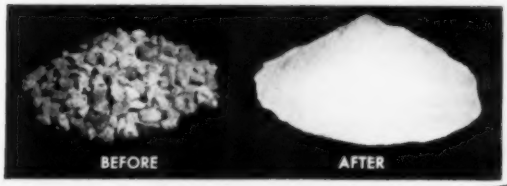
79% passing through #50 screen
65% passing through #60 screen
57% passing through #100 screen
33% passing through #200 screen *

3 Now to the Eagle Laboratory for gradation analysis. Here the batch is processed through U.S. Standard Sieve Screens—from #8 to #200 mesh—with the results shown above.

* Convinced by this gradation test, an Eagle Cage Mill is now operating in the Abbeyville plant where greater output—higher percentage of fines—are daily producing greater profits than before.

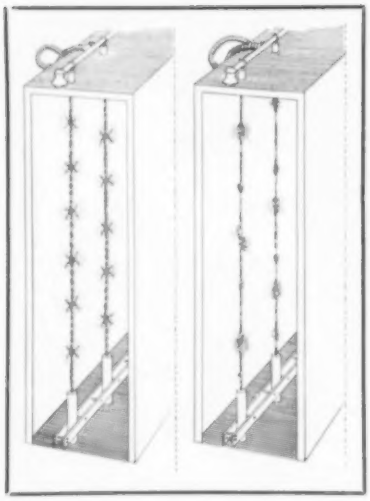
Compare this Abbeyville test result with **your** percentage of fines. If you would like to increase your percentage of fines—and your profit—send us a sample (200 lbs. to 500 lbs.) freight collect. See for yourself! **No cost to you—no obligation!**

AG-LIME FINES BRING MORE MONEY!



SEND US A SAMPLE

TO: Eagle Crusher Company
Galion, Ohio



● Successful application of a new type of electrode for industrial gas cleaning and air pollution control has been announced by engineers of the Metal Products Division, Koppers Company, Inc.

The new device, according to Koppers officials, achieves complete control of the corona discharge on the energizing electrodes of electrostatic precipitators and thus greatly increases their efficiency.

The electrostatic precipitator removes solids from flue gases by subjecting them to an electrical charge. As the gases pass through the precipitator fields, the solid particles receive a negative charge from wire energizing electrodes and are then attracted to grounded collecting plates. The efficiency of the unit is in direct proportion to the power which can be introduced into the energizing electrodes without a "flash-over" to the collecting plates. Collected material tends to build up on the surface of these plates and must be dislodged by frequent, automatic rapping.

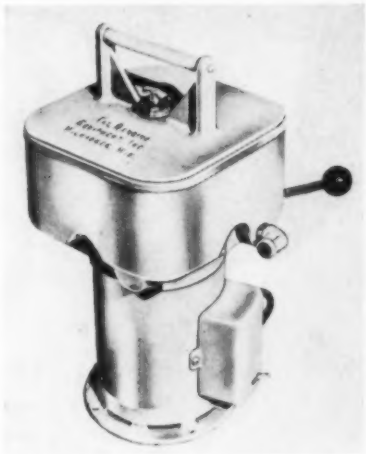
To a lesser degree, this build-up also occurs on the energizing wire electrodes, and here its insulating effect tends to produce an unpredictable and uncontrolled pattern in the corona discharge, which is the key factor in the precipitating action. Where dust clings to the wire there will be less corona discharge. This insulating action, by forcing greater concentration of corona on clean sections of the wire, tends to produce at those points a quicker "flash-over" in relation to the applied power.

The new Koppers application prevents uneven accumulation of dust and hence an uncontrolled corona discharge, by substituting for the conventional straight-wire energizer an electrode which closely resembles ordinary barbed wire.

Suspended vertically between the collecting plates, the new wire has demonstrated that, whatever insulating material may build up on the main wire, the barb points remain clean and the corona discharge, therefore, occurs constantly at those points.

By proper spacing of these barbs, complete control of the corona discharge can be achieved throughout the entire precipitator.

Koppers engineers have found that by using the controlled corona discharge electrodes, substantially greater power may be applied, and higher efficiencies obtained, in existing equipment, thus permitting operation appreciably beyond original designed capacity. Also, in new design, smaller precipitators can now be offered for dust loadings and gas volumes that would require larger units equipped with conventional discharge electrodes. **(354)**



● Tal Bending Equipment, Inc., has developed a fast, powerful, portable hydraulic motor pump rated for 10,000 p.s.i. intermittent and 5,000 p.s.i. continued duty, delivering 80 cu. in. of oil per minute. The pump is driven by a standard ½ hp., single-phase, 60-cycle, 1,750 r.p.m., 110-220 volt motor.

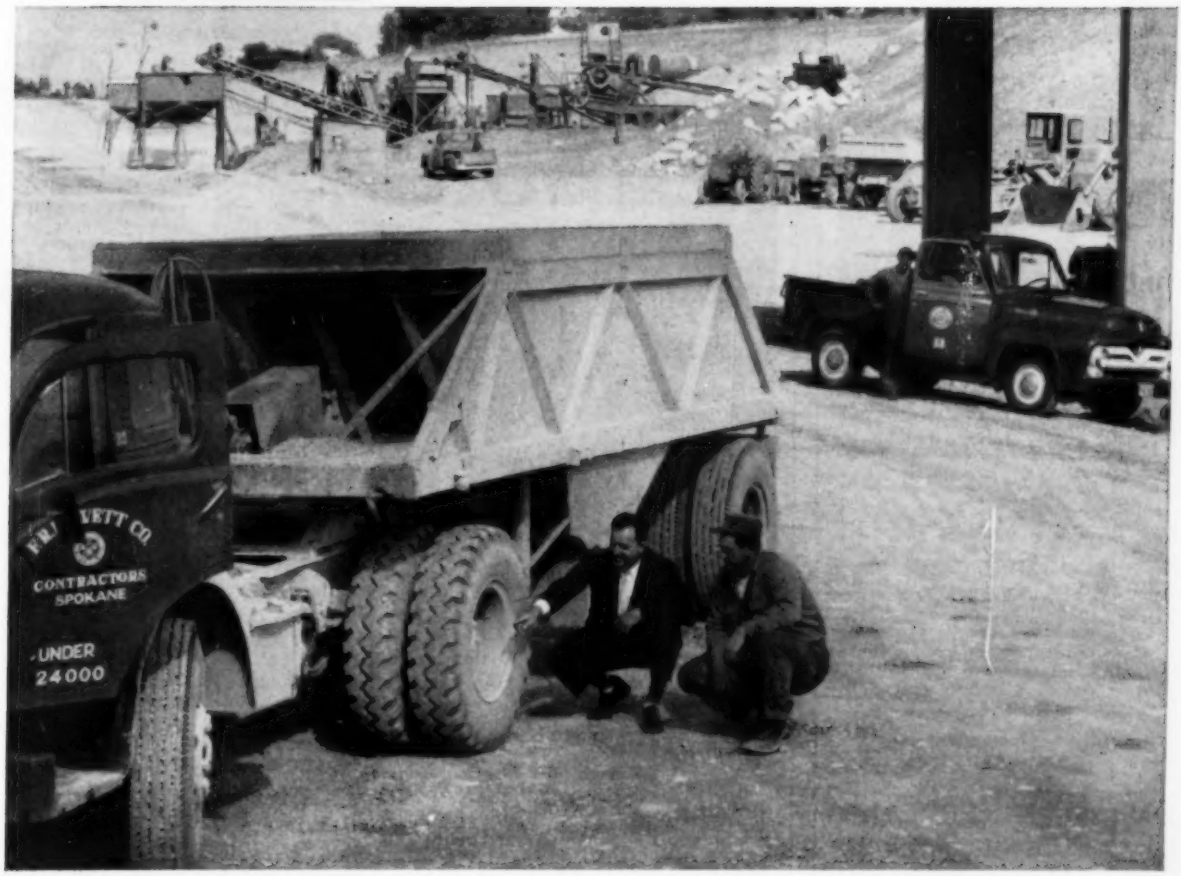
Designated the MP-27 motor pump, the unit has application wherever hydraulic power is used or can be used to replace mechanical power. **(355)**

● The Massey-Ferguson Work Bull 1001 tractor loader features no-shift reversing, power steering, individually controlled brakes, and five-speed transmission in both forward and reverse. Power to load is automatically adjusted by a torque converter which provides extra torque where required.

A special nitrogen accumulator cylinder serves as a shock absorber for the hydraulics when the 1001 is loaded and going over rough terrain. Lift arms can also be set in a float position so that the attachment will ride with the contour of the terrain.

The 1001 Work Bull has a 43 deg. tilt back with 5,200 lb. of breakaway power. Its standard bucket has a 75 in. width with ⅞ cu. yd. payload capacity. As a fork lift, the 1001 lifts 2,500 lb. to 10 ft. 5 in. **(356)**

B.F.Goodrich



B.F.Goodrich tires give up to 50% more service, contractor reports

F. R. HEWETT CO., general contractor of Spokane, Washington, operates 147 pieces of equipment on jobs throughout the Pacific Northwest. Here the job is the Spokane Valley Freeway. "We switched to B.F.Goodrich FLEX-RITE NYLON Rock Logger tires 3 years ago," writes Truck Supt. Richard M. Ward. "They have given us up to 50% more service than the tires we used previously—and we have been able to retread them too!" Today Hewett uses B.F.Goodrich tires 100%.

Reports like this come in from contractors all over the country. They find B.F.Goodrich off-the-road tires give them longer, trouble-free service, thanks in part to FLEX-RITE NYLON cord construction. FLEX-RITE NYLON withstands double the impact of ordinary cord materials, resists heat blowouts and flex breaks. Result: the FLEX-RITE NYLON cord body outwears even extra-thick B.F.Goodrich treads —can be retreaded over and over.

Follow the lead of contractors like Hewett, who reports B.F.Goodrich tires give "very low cost per hour." See your B.F.Goodrich dealer today. He's listed under Tires in the Yellow Pages of your phone book. And ask about the new Rock Service Tubeless or conventional tire that prevents unnecessary tire failures! *B.F.Goodrich Tire Co., A Division of The B.F.Goodrich Co., Akron 18, Ohio.*

Specify B.F.Goodrich Tubeless or tube-type tires when ordering new equipment

Smileage!

B.F.Goodrich truck tires

STOP
material waste
REDUCE
handling costs
IMPROVE
product quality

with a
designed-to-
your-need

Marietta

storage system

Out-of-date storage and handling methods for sand gravel and cement mean lost time . . . lost materials . . . lost profits.

Let Marietta design and erect an efficient and economical storage system for your needs. Marietta concrete silos are quickly constructed without weather or material delays. Precast solid or lightweight air-cell concrete staves interlock to form an air-tight wall that keeps material stored fresh and dry . . . safe from weather or fire damage.

Marietta concrete silos provide years of service with minimum maintenance . . . save money through reduced insurance costs.

Any type of mechanical or pneumatic conveyors, feeders or discharge systems can be safely mounted on top or on the sidewalls of Marietta silos. Consult with Marietta now for the best answer to your particular storage problems . . . benefit by their more than 40 years "Know-how" in precast concrete and industrial storage systems.

Write now for a copy of the Marietta Industrial Storage Systems Booklet. Full cooperation extended to your own engineering staff, consultants and contractors.

The **MARIETTA**
CONCRETE CORP.
MARIETTA, OHIO
BRANCH OFFICES: 501 Fifth Ave., New York 17, New York
BRANCH PLANTS: Baltimore 21, Md., Charlotte 6, N.C., Nashville, Tenn., Jamestown, N.Y.

Enter 56 on card, page 101

The NoVo sifting machine employs sonic vibrations for sifting operations.

● NoVo sifting machines, operating on the principal of sonic vibration, are capable of separating ½ in. material and larger down to 30 microns (425 mesh). These machines, developed in Germany, are being manufactured and sold in the United States, Canada, and Mexico by the United Specialties Company.

The NoVo-Screen sonic sifting machines usually consist of two essential elements—the sifting unit, consisting of a carrier with the vibrator units, the mesh frame and mesh fabric and below it a collecting cone; and the hopper with the feeding device.

In the NoVo sonic screen, a fundamental frequency in the lower sonic range is induced through the electrical control system to an electromagnet which transmits this energy directly to the screen area. Superimposed upon this fundamental frequency is a series of harmonics which create violent vibratory action with very little flexing of the screen itself—the screen moving only within a 2 millimeter range. These harmonics often build up the basic oscillation of 120 cycles per second to more than 6,000 cycles per second. As the oscillations spread out across the sonic screen from the connecting arms, the waves begin to overlap, adding to the vibration rate and eliminating dead areas on the screen. **(357)**

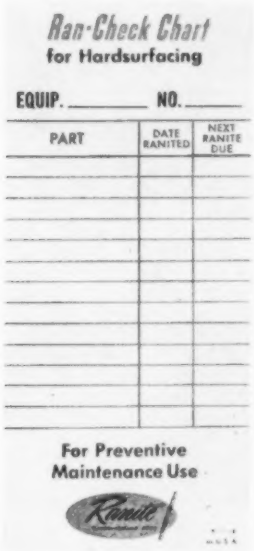
● Chicago Pneumatic Tool Company has introduced three new percussive drills for medium and deep-hole operations. For heavy-duty operations, the 4½ in. Model CP-450DR handles 3 in. holes to 75 ft. depths, or larger holes to lesser depths; the CP-400DR drills 2½ in. holes to 50 ft., or larger holes to lesser depths.

For medium operations the new 4 in. standard-rotation Model CP-400 drills 3 in. holes to 25 ft.

Both the heavier-duty models, the CP-450DR and the CP-400DR, have standard-neutral-reverse-rotation. The machined alloy-steel striking bar in the locked-in-shank chuck assembly is threaded for sectional steel. **(358)**

● Rankin Manufacturing Company, producer of Ranite hardsurfacing rods, offers to equipment owners a system for reducing parts maintenance costs.

The company has made available, free of charge, printed "Ran-Check-Charts" which simplify the



record-keeping of inspection and hardsurfacing applications. These charts are obtainable in pad form or as individual self-adhering stickers which can be attached directly to the various pieces of equipment. Thus, information on the condition of the parts and the date of checking or hardfacing is always at hand. (359)

● A new double wedge socket developed by the Page Engineering Company provides a quick and easy method of making cable changes. With this new socket, one man, equipped with a hammer or a small sledge, can release the cable in a few minutes' time.

Design of the load socket employs two wedges. The bottom and smaller wedge is not removable, but slides forward and back on a pin and slot arrangement. The top wedge is completely removable and is large enough so that the cable can be wrapped around without difficulty. With the cable in place and pull applied, the two wedges slide forward and hold the cable securely in place. To release, either wedge is given a sharp tap with a hammer. This s ides the bottom wedge back in its slot, releasing the pressure so that the top wedge can be lifted out and the cable removed.

The sockets, made of manganese or heat-treated alloy steel, are available in a complete range of sizes to accommodate wire cable from 1-5/8 in. through 3-1/8 in., with single, double, or triple eye connections. They are heavily reinforced to prevent wear.

The grooves of the wedges are shaped so that the cable cannot be flattened or distorted. (360)

BRUNNER & LAY ROK-BITS and COYOTE HOLE DRILLING PAY-OFF

for J. B. Stringfellow Co. supplying up to 20 ton Capstones for mile-long breakwater

● Drilling the dense, hard blue granite at the Riverside, Calif. quarry of J. B. Stringfellow is a test of any bit. Brunner & Lay carbide Rok-Bits are used 100%. They drill straight, ROUND, easy-to-load holes. Provide better chip clearance; so bit works in new rock, not its own cuttings. Offer deep seated, generous carbides that stay put to give you big daily tonnage, at lowest cost. See your dealer, or call our nearest office. Ask for NEW, complete catalog #756, on your letterhead, stating your position. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. *Our 76th year. Plants & Warehouses:* Philadelphia Asheville; Birmingham; Dallas; Denver; Los Angeles; Portland, Ore.; Montreal.

The quarrymen sock tunnel holes 50 to 60 ft. deep into the granite face. Horizontal spacing is about 100 ft. The ends of the straight-in-tunnels are squared off and connected by 5 x 5 ft. bore, parallel with the quarry face. Rock required for job totals over 1,000,000 tons.

Alloy and carbon drill steel

Brunner & Lay carbide ROK-BITS in these body types—cross, chisel, "X", cutaway, taper socket. Furnished in standard wagon drill and hand held drill threads also—1.000; 700; 600; 400; 200 and 1-7.50 threads. Bit sizes up to 6½-in. in our Hole-Master.

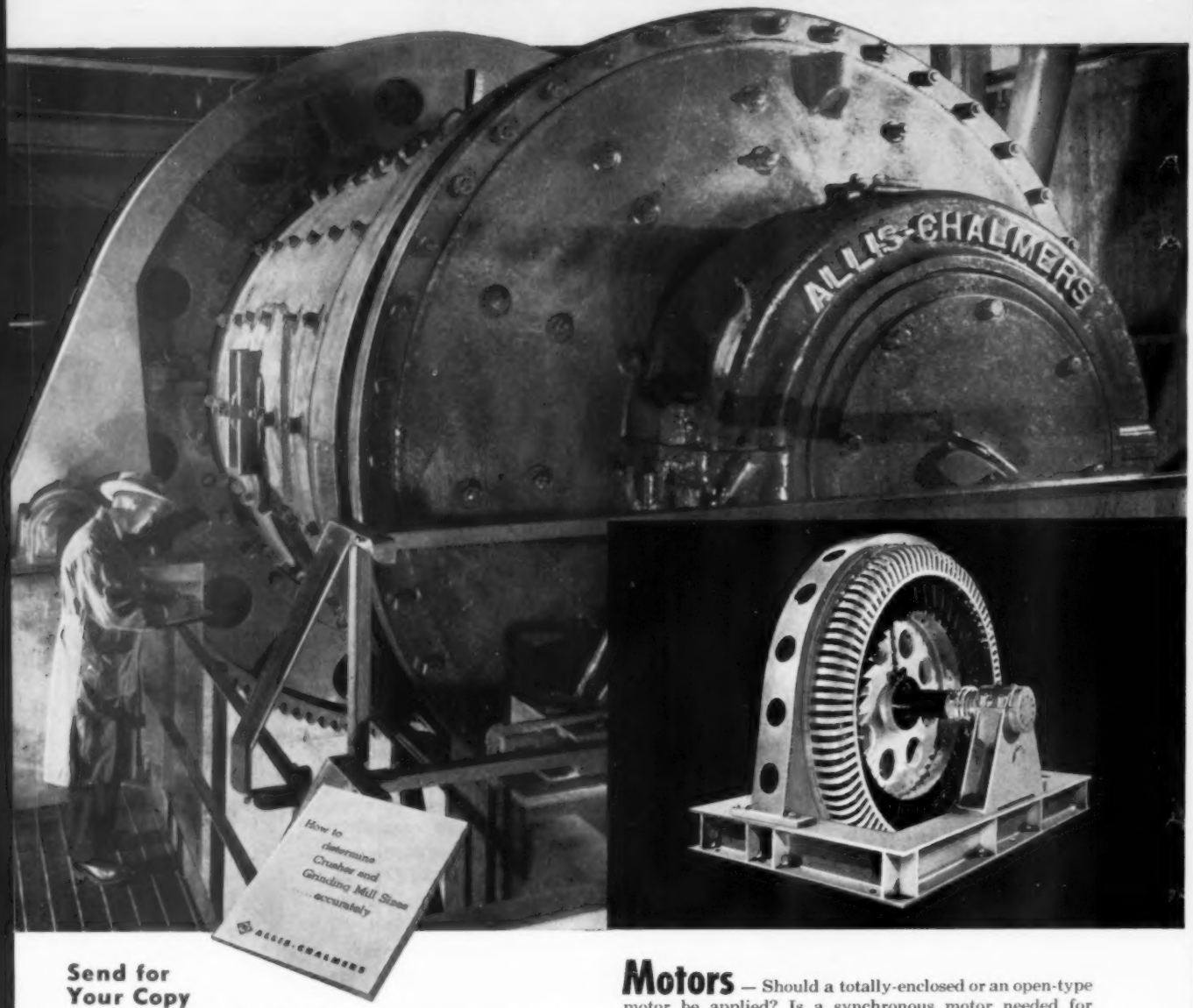
Brunner & Lay Products

CARBIDE ROK-BITS • INTRA-SET STEEL • DRILL RODS • COUPLINGS, ADAPTERS & EXTENSION STEEL

Enter 57 on card, page 101

There's Only One SURE

Matched and



Send for Your Copy

This bulletin with its explanation of the "work index" formula enables you to evaluate any crushing or grinding operation . . . . compare efficiencies of plants, circuits, and machines. Write for this valuable reference. It offers the only truly scientific method of determining the right machine — the only scientific approach to maximum production at lowest cost. Ask for Bulletin 07R7995. Individual bulletins covering specific equipment are also available.

Motors — Should a totally-enclosed or an open-type motor be applied? Is a synchronous motor needed for power factor correction? The right answers to these questions are important to you. By applying the "work index" formula, Allis-Chalmers engineers can determine the required power input and apply the right size motor needed for optimum efficiency. Familiarity with a wide range of cement and processing operations helps us apply the "work index" method to your equipment applications correctly.

Get all the facts. See your Allis-Chalmers representative or write Allis-Chalmers, Industrial Equipment Division. Milwaukee 1, Wisconsin.

ALLIS-

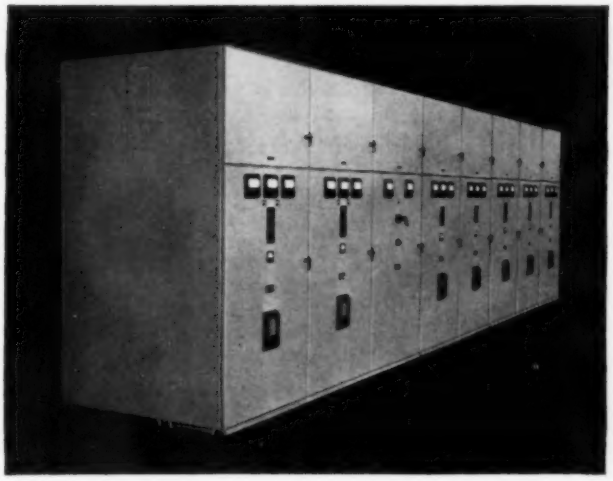
WAY of Getting Equipment

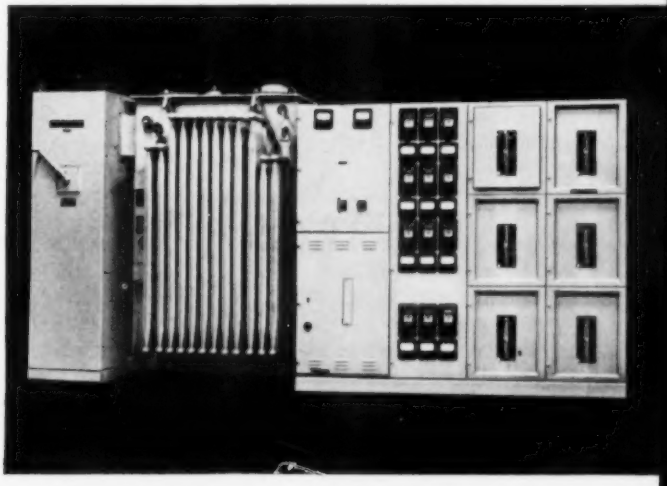
Correctly Applied

Specify Allis-Chalmers Processing Machinery *And* Electrical Equipment for the Cement Industry

Allis-Chalmers has long been recognized as a leading supplier of processing machinery for the cement industry. In fact more than 50% of the nation's cement is produced with A-C crushers, mills, screens and kilns. Allis-Chalmers is also one of the largest manufacturers of power equipment. *No other company* makes both the mechanical and electrical machinery for the cement industry. As a result, no other manufacturer has comparable facilities and experience necessary to apply and coordinate all equipment for a complete cement plant.

Industry's Top Technical Team at Your Service — Before a recommendation is made, requirements and variables are given a careful going-over by an Allis-Chalmers team comprised of research, design, manufacturing and application specialists from the electrical equipment and processing machinery departments. Characteristics of material, capacity, feed, preparation, balance of gradation, torque characteristics, system power factor needs are some of the many factors evaluated. Ideas and technical information evolving from this "meeting of minds" are then correlated in *one* department specializing in cement industry application. Components are matched to meet the requirements of your job. Responsibility for complete plant efficiency rests with one company.





Control — "Inching" a grinding mill is a push-button operation with synchronous motor control. Holding down the "inch" button rotates mill. The costly, time-consuming inconvenience of transferring from operating bus to inching bus is eliminated by using an automatic throw-over arrangement utilizing two high voltage air contactors.

Completely automatic and packaged pyro-processing control, with speed of feeder and kiln synchronized, is another recent Allis-Chalmers development.

Unit Substations — Allis-Chalmers LCS unit substations pay off in flexibility, ease of installation, maintenance, safety. Completely factory engineered incoming line units, transformer and low voltage switchgear combinations are coordinated and applied specifically for your distribution system. You get features such as breaker storage in the disconnected position in the unit, independent long time and instant trip elements on the breaker, dead-front circuit breaker construction.

CHALMERS A-C ALLIS-CHALMERS

A-5384

Enter 58 on card, page 101

● Napco Industries, Inc., is marketing a new four-wheel-drive, four-wheel-steer tractor called the Napco Crab. This tractor handles a variety of attachments, including loader, dozer, forklift, and backhoe.

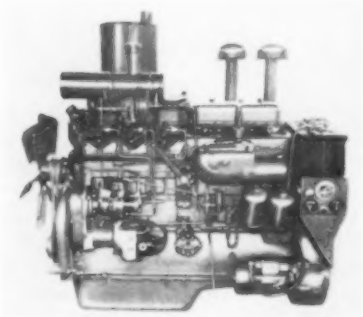
A three-position selector permits front only, front and rear wheel, or oblique steering from a single automotive-type wheel. A special torque converter allows the Crab to furnish maximum horsepower at slow speeds and provide increased digging or lifting effort whenever required.

The Crab also features four speeds forward and four speeds reverse, 4-wheel hydraulic brakes, and mechanical power-take-off. **(361)**

● The 125 Pneumadiesel, a new, full-diesel engine driven air compressor capable of delivering 125 c.f.m., has been introduced by Schramm, Inc.

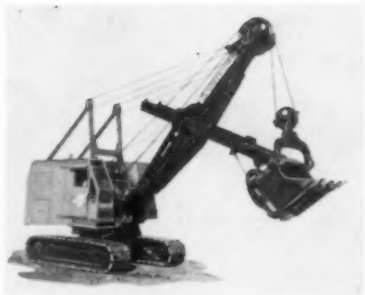
The unit incorporates 12-v. starting equipment, which starts the engine, preheats it, and then switches to full diesel.

The 125 is of en bloc construction, which permits a lighter weight



compressor with greater interchangeability of parts.

The Model 125 Pneumadiesel is available in skidded and two-wheel mountings and also as an integral part of Schramm's diesel Pneumatractors and diesel Pneumatractor Rotadrills. **(362)**



● Manitowoc Engineering Corporation has added the 3 cu. yd. Model 3600 to its line of cranes and excavators. Basically a shovel, the Model 3600 is also convertible to crane, clamshell, and dragline applications.

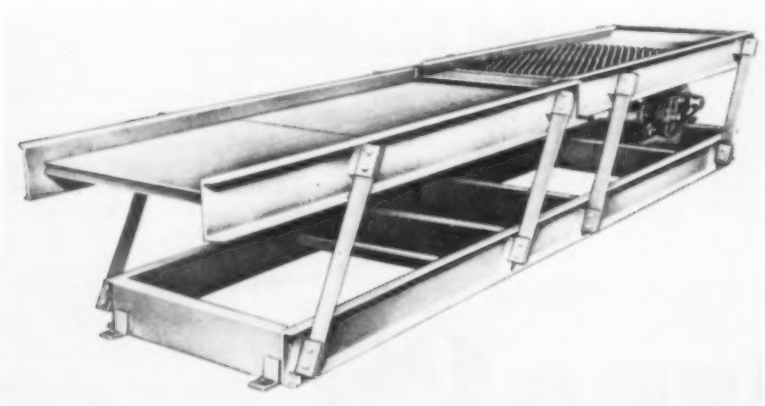
The new unit has a rugged, "closed-face" box design tread, which is self-cleaning. This tread, in addition to direct power flow to the travel gears, enables the Model 3600 to climb 30 deg. grades over any terrain.

Mobility is aided by components such as the Manitowoc self-removing counterweight for transporting without exceeding highway weight restrictions. A low overhead clearance of only 14 ft. 6½ in. is possible because the gantry folds down flat on the cab, while the boom stretches out straight ahead. **(364)**

● Syntron Company's new shaker screen is designed for the fast, efficient scalping and sizing of heavy duty materials.

A variety of screen surfaces—woven wire cloth, wedge slot, flange lip, or perforated plate—can be easily fitted into the screen box of either or both sections. The screen will accomplish a number of gradations, depending on the material being handled and the length of the vibrating section.

Syntron shaker screens are also adaptable to some dewatering processes. They become picking tables by replacing screen surfaces with flat steel plates. **(363)**



●Austin Powder Company announces new, lightweight tamping poles which permit faster tamping of explosives in both horizontal and vertical blast holes.

A feature of the poles is a special hook and eye arrangement for adding lengths. This involves passing the hook from the extension pole through the eye at the upper end of the lead pole. The resulting union is said to be strong enough to withstand heaviest leverage without slipping or breaking free.

Made of aluminum pipe, the new tamping poles are offered with 1⅝-, 4½-, or 5-in. diameter rubber head blocks. Lengths of 4 to 20 ft. are available. **(365)**

Where Armco Liner Plate can save you time and money

Conveyor Tunnels

Tunnels of Armco Liner Plate are widely used under storage bins or piles. The corrugated metal design gives maximum strength with minimum weight. Gate openings can be provided simply by leaving out plates where desired. Circular structures are available in diameters from 4 to 15 feet in 2-inch increments.

Storage Bins

You can easily meet your storage requirements, too, with Armco Liner Plate storage bins. Capacities range from 50 to 3000 tons. The light weight steel plates are easily and quickly bolted together to form strong, long-lasting bins. If desired, you can dismantle an Armco Liner Plate bin and move it to another location.

Send coupon for details

The manual "Armco Liner Plate," will give you complete details. Just fill out and send the coupon below. Armco Drainage & Metal Products, Inc., 3318 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation.

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LINER PLATES

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Armco Drainage & Metal Products, Inc.
3318 Curtis Street, Middletown, Ohio

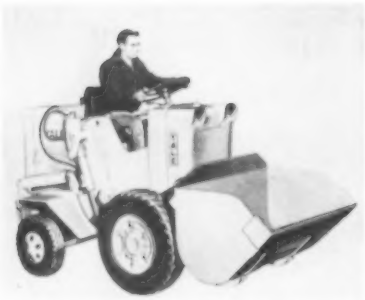
Send me manual TL-7854, "Armco Liner Plate." I am interested in liner plate for the following uses:_____

NAME_____ TITLE_____

COMPANY_____

STREET_____

CITY_____ ZONE____ STATE_____



● The Yale Materials Handling Division of The Yale & Towne Manufacturing Company has entered the field of bulk materials handling with the production of the Y-18 tractor shovel.

Features contributing to the greater work capacity of the Y-18 include a 2,500 lb. carry capacity; full 6 ft. high dumping clearance; fully automatic Yale torque transmission which eliminates clutch pedal and manual gear changing; rapid acceleration, 0 to 8 m.p.h. in 3½ seconds; top speed of 13 m.p.h.; and 45 deg. bucket tip-back.

The Y-18 tractor shovel is being introduced with a range of bucket capacities from 10 to 27 cu. ft. The unit will also be made available with a variety of attachments for specialized handling requirements. **(366)**

● A new trailer-mounted Trackmaster hydraulic track pin press has been developed by the Owatonna Tool Company for making emergency repairs or complete track overhauls at the breakdown site in the field.

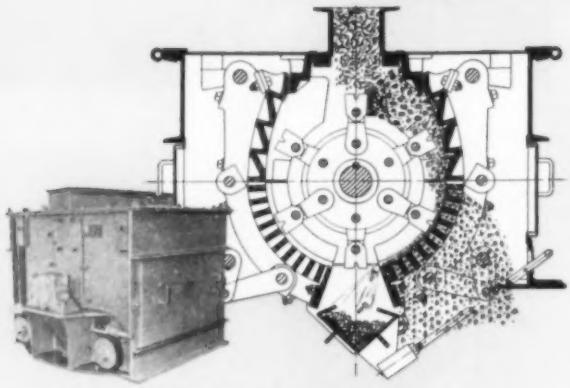
The trailer-Trackmaster uses a 125-ton ram to push both pin and bushing simultaneously, without damaging sidelinks. The unit has a hydraulic-powered winch and indexer to locate tracks properly for pressing, allowing one-man operation. A THD Wisconsin engine which develops 11.4 hp. at 2,000 r.p.m. supplies the power.

The highly-maneuverable unit can be easily hauled by a light pickup truck. It has ample ground clearance—12½ in.—for off-the-highway use. **(367)**

● Stardrill-Keystone Company announces the Keystone-Franks Model 40 rotary blast hole drill. A rugged machine in the medium size range, the Model KF-40 is designed to operate efficiently with the down-the-hole drill in hard rock formations. It can also be used for conventional rock bit drilling with air, as well as soft formation drag bit drilling at rapid speeds.

The Model KF-40, powered by a heavy-duty diesel power unit mounted on the drill frame, can be mounted on a light tandem axle truck with a gasoline engine. Fingertip air controls are conveniently located for easy operation. Enclosed oil bath construction provides long, trouble-free service. **(368)**

CUT CRUSHING COSTS THIS WAY



Pennsylvania Reversible Hammermill

Nearly everybody knows that in many cases the Pennsylvania Reversible Impactor is the most economical and efficient mill for secondary crushing. But there are cases where the Pennsylvania Reversible Hammermill gets the call over the Impactor. This cousin to the Impactor also does a large amount of stone reduction by impact. (Note upper half of crushing zone above.) So when the pre-crushed material drops to the bottom of the mill there is a minimum of abrasive crushing action on the cage bars. This saves money. Also the expense and room needed for a closed circuit system is saved. Reversibility eliminates turning of hammers. Adjustable cage assures constant tonnage and uniform product for entire life of hammers and cage bars.

Pennsylvania Reversible Impactor

Pennsylvania Crusher Division
Bath Iron Works Corporation
West Chester, Penna.

PENNSYLVANIA CRUSHERS

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Firestones keep the job on schedule!

From the Pan-American Highway to the Barnhart Power Dam on the St. Lawrence Seaway, Firestones are slashing downtime losses, cutting tire costs. Firestone Rock Grip Tires with S/F (safety-fortified) Nylon withstand severest punishment to outwork and outwear them all! Two great non-directional tread designs adapt these off-the-highway tires to *any* terrain and eliminate excessive spare tire inventories. You get the *flotation and traction* you need in loose earth and wet going. You get S/F Nylon's *armored* protection for hauls over splintered shale and knife-edged rock. Firestone tires defy cuts and slugging impacts like no other tire made. Ask your local Firestone Tire Sales Expert about these *tubed* or *tubeless* heavy-duty tires. Call him today at your local Firestone Dealer or Store.

Rock Grip Wide Base Rock Grip

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Labor Developments

The End of the Closed Shop

By S. HERBERT UNTERBERGER

S. Herbert Unterberger and Company
Economists-Consultants on Labor and Industrial Relations

Washington, D. C.-Philadelphia, Pa.

THE passage of the Taft-Hartley Act was supposed to have ended the closed shop, that is, the situation where an employer is required to hire all of his employees from among the members of a particular union, once and for all.

Now, more than ten years after the passage of that law, closed shops are still almost the universal rule in the building construction industry. According to present plans, this well known and well publicized continuing violation is destined to come to an end on June 1 of this year. Finally, the National Labor Relations Board has warned the contractors and the labor unions that they should end their closed shop practices by that date or face the legal consequences. This was done by a letter from Jerome Fenton, the Board's general counsel, to the AFL-CIO Building and Construction Trades Department and the principal employer's association, the Associated General Contractors and the National Constructors Association.

Despite the fact that the law specifically prohibits employers and unions from including closed shop provisions in their labor agreements, such provisions continue to exist in a large number of building trade agreements, and virtually no action was ever taken by any government agency.

By way of example, the contract between a chapter of the National Electrical Contractors Association and a local union of the International Brotherhood of Electrical Workers, currently in effect, includes the requirement that "the employer shall employ only members in good standing of the union in all electrical work." To be sure, this particular provision goes on to say, "However, should the union be unable to furnish the employer the required skilled workmen within forty eight (48) hours of the time the Union or its representatives receives the request, the employer shall have the right to secure such workmen, acceptable to the Union, as are available, and the Union shall issue temporary working cards weekly to these men until such time as it can furnish the men required."

This provision permitting the employer to hire non-union members when the union cannot supply them does not make the provision conform to the requirements of the law, particularly since the men hired must be acceptable to the Union and are subject to discharge as soon as Union men become available. Nevertheless, provisions like this are very widespread in building construction labor agreements.

A few agreements have been changed so that they are ostensibly in conformity with the requirements of the law, but frequently, in actual practice there is virtually no difference between their administration and that of a straight closed shop agreement. These agreements are widely published and well known, and many of them are on file either with the National Labor Relations Board or the U. S. Department of Labor in connection with determinations made under the Davis-Bacon Act.

Through the years no one has done anything about these obviously illegal provisions, principally because no one knew exactly what to do. The problem is, of course, that employment in the building construction industry is characteristically casual. The employers have learned to rely on the labor unions to supply the necessary workmen when they need them. Under such circumstances, it is entirely to be expected that the unions would refer only their members to such jobs, and that to protect their positions they would include such requirements in the labor agreements.

For the most part, employers have complained very little about these closed shop requirements, and in some cases they have defended them as being the only effective way to operate in this particular industry.

On the other hand, this violation of a federal law has bothered a large number of people, including the members of the National Labor Relations Board. In recent years, the membership and the philosophy of that board has been changing, and as a consequence, the members began taking a closer look at construction hiring practices.

Also, the McClellan committee, which has been investigating racketeering in labor unions, has urged the Board to take some action in this matter because it presumably has found a close connection between the closed shop and unions suspected of racketeering. Certainly, the kind of control which a closed shop gives to a union leader provides a real temptation to him to use his powers to obtain "gifts" from the employers who are totally reliant upon him for their labor force, that is, for their ability to fulfill their obligations to their customers.

It is likely that the employers and unions would try to observe the new requirements, if only to avoid the possible penalty which they risk incurring. The penalties mentioned in the Fenton warning are (1) the possibility that the union will be required to return to the

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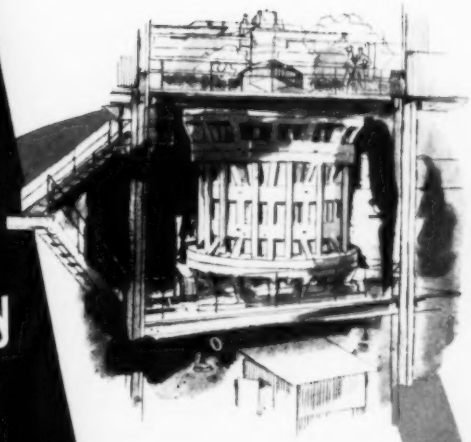

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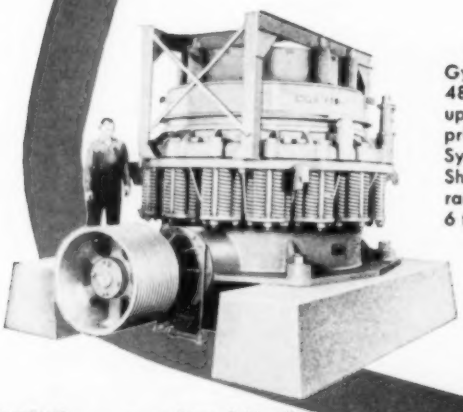

For heavy duty primary breaking, Symons Gyratory Crushers are available in 30″, 42″, 48″, 54″, 60″ and 72″ sizes, for capacities up to 3500 and more tons per hour. For primary, secondary and finer reductions, Symons Cone Crushers, in Standard and Short Head types, are available in sizes ranging from 22″ to 7′—in capacities from 6 to 900 or more tons per hour.

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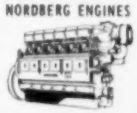

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workers all the dues and assessments collected under the closed shop conditions from the start of the construction contract and (2) the possibility of being required to pay a non-union worker denied a job under a closed shop agreement a sum amounting to the wages which he would have earned if he had obtained the job. In the latter case, particularly, both employers and unions could be required to share the costs.

Finally, there is the matter of handling this rather difficult problem of hiring casual employees. From present indications, it is possible that the procedures already worked out in the maritime industry, which is faced with essentially the same kind of problem, may be adopted in the building trades.

In the maritime industry, employers rely on union hiring halls for their employees. These are operated entirely by the union, but are open to both union members and non-union job applicants. To avoid charges of discrimination, the hiring halls are supposed to refer applicants to jobs in rotation, without regard to their union status. This system is, of course, very difficult to police. Even if the employees are referred in rotation, certain means may be used to discourage non-union applicants from attempting to register with the hiring halls. Nevertheless, no other method appears to be available.

Even the rather imperfect hiring hall arrangements make it possible for non-union building trade employees to try to get a job in the industry. If they are denied, they may be able to get the help of some government agency in establishing their rights to that job.

From the standpoint of the employers, however, these new Fenton requirements mean some additional responsibilities and risks. The employer can no longer feel free of all responsibility merely because he is obtaining his employees through a union hiring hall which the union leader tells him is being operated in accordance with all of the requirements for nondiscrimination.

To be certain that he is not himself violating the law, the employer will have to make his own investigation that the hiring hall is actually being operated in accordance with the requirements of the Taft-Hartley Act. Otherwise, he may find himself defending a suit for lost pay from a potential employee, unknown to him, who was denied access to the job without the employer's knowledge.

Opposition to Share-the-Work Arrangement

A curious thing has been happening in the city of Detroit as a result of the recent layoffs in the automobile manufacturing industry.

It used to be that when layoffs were inevitable, unions would object to laying off some employees while others worked full time. As a result, many labor agreements include fairly elaborate programs for work sharing, at least, down to a certain number of hours per week. In the recent reductions in the automobile industry, the employers scheduled such shorter work weeks, in preference to laying off large numbers of employees. But, in this case, the union took a different approach. It insisted that employees kept on the payroll had to be employed a *full week* and excess employees had to be laid off completely.

This change in approach results, in great part, from the fact that the automobile industry has a supplementary unemployment benefit program. Under that program, employees laid off receive up to 65 percent of their previous take-home pay, at least for a certain period. Since some of these payments, namely, those derived from the state unemployment compensation programs, are tax-free, the take-home amount for the unemployed worker is not very much below his previous take-home pay. Overall, therefore, more money is paid out to automobile workers under the arrangement of either full time work or total layoff than under a share-the-work program. This is probably the principal reason for the change in approach.

Some analysts, however, seem to find deeper motivation than this in the union's action. The union is already having trouble with its more skilled members, who feel that they have made substantial sacrifices in behalf of the less skilled employees. If the supplementary unemployment benefits program had not been negotiated a couple of years ago, the skilled workers believe that they would have received a much larger wage increase. Having made that sacrifice then, they are not content to sacrifice further now by sharing the work with the less skilled workers or those with less seniority.

Thus, the union's demand is that the more skilled employees and/or those with more seniority be favored by having the opportunity to work full time, while the less skilled ones with less seniority will have to take such losses as are involved in living on unemployment compensation and supplementary unemployment benefits. These losses may not be too great immediately; but if the period of unemployment lasts for any substantial time, the unemployment benefits may be exhausted.

The situation in Detroit is typical of the unanticipated consequences so often following a new development in industrial relations.

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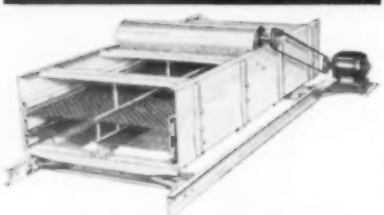

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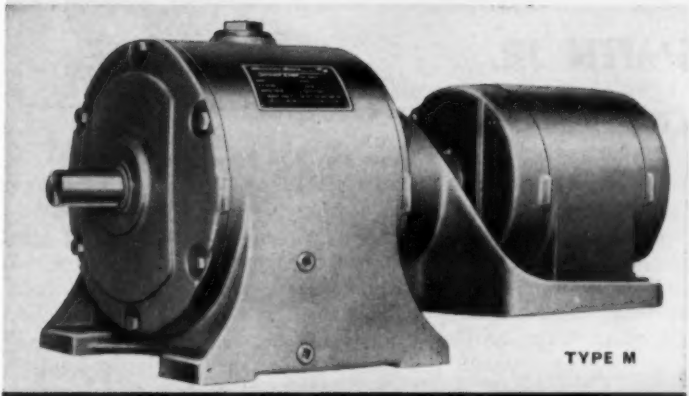
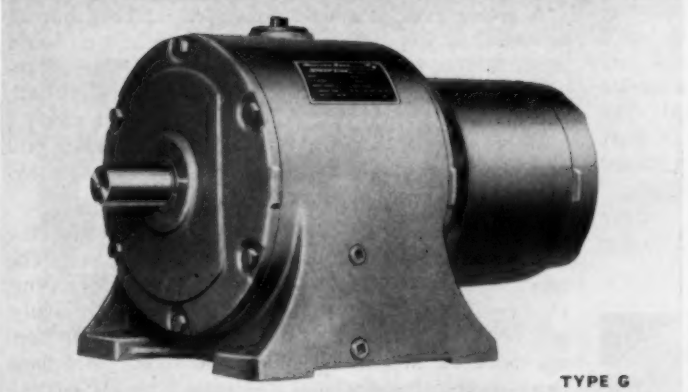
MARKETING BULLETIN

Important Gearmotor Announcement



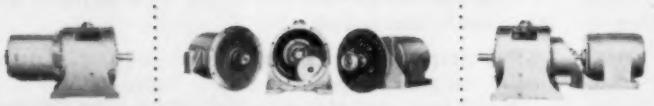
TYPE M

Customer-proved and -preferred advantages of this Western Gear all-motor gearmotor include: easy motor replacement; straddle-mounted high speed pinion for precision alignment; balanced heat treat to ensure long life; extra large inspection cap that eliminates removing end bells for inspection.



TYPE G

Utmost compactness is the first obvious advantage of the Western Gear integral gearmotor. Other superior points include: shank-type pinion that provides maximum strength and concentricity; precision-machined adapter that assures accurate alignment; double output shaft seal to keep oil in and foreign materials out; wide bearing spacing allowing maximum overhung loads.



Western Gear integral and all-motor gearmotors are companion products which may be converted, right in the field, simply by interchanging motor packages. Ratios changed easily and quickly, too, with no special tools. This unique advantage is of greatest importance when unforeseen requirements for different speeds or motor packages arise in the field.

Western Gear now marketing own line of gearmotors, products of 25 years of proved and preferred production for major motor manufacturers.

Western Gear Corporation announces the design, manufacture and marketing of its line of StraitLine integral and all-motor gearmotors ranging from 1 to 60 HP and from 9 to 520 RPM.

The StraitLine gearmotor combines all the best customer-preferred features proved through 25 years of manufacture for a major motor manufacturer.

Western Gear has designed its line of gearmotors utilizing the "building block" principle. This results in a minimum renewal parts inventory because of parts standardization, and in a high degree of interchangeability. Motor packages and gear sets are easily interchanged, and ratios changed simply and quickly, right in the field.

StraitLine gearmotors, both integral and all-motor, are available for immediate delivery in a wide variety of sizes and reductions, through Western Gear's district sales offices, representatives and distributors.

Glenn Malme • **Western Gear Corporation** PQ
P. O. Box 182 • Lynwood, California

Please send me information on StraitLine Gearmotors.

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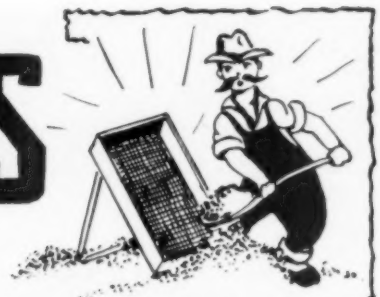


By RAY L. SMITH JR.

A CORPORATION may spread itself over half the entire world. It may employ a hundred thousand men, but the average person will usually form his judgment on the action of a single employee. If this person is rude or inefficient, it will take a lot of kindness and efficiency to overcome this one bad impression. Every member of an organization thus becomes the *most* important member of that organization more often than he thinks!

Pointed Suggestion

IN CASE the connection between the shy young woman and the filtration system (that's the pipes and stuff in the box, Junior!) in the accompanying photograph may elude our readers, we'd like to explain. According to the release that was attached to the picture, she's explaining that the filter fabrics woven of Dynel and used for purifying swimming pool water have a service life 300 percent longer than those formerly used. The equipment used is of the vacuum type with a filter medium of diatomaceous earth retained by textured cloth filter bags.

So far as we can judge, there's certainly nothing wrong with her texture, and she can come and change the filters in our pool any old time.

How the Ball Bounces

ALONG Manhattan's Madison Avenue, where no one ups periscope without first checking with the research boys, admen were passing around the latest gag:

The research director of a major agency was ordered to prepare a study about fleas. He put a flea on his desk and trained it to jump over his finger at his command. Then, he pulled out two of the flea's six legs. "Jump," he ordered, and the flea still jumped. Two more legs came off. Again the flea jumped. Finally, he pulled off the last two. "Jump," he commanded. The flea did not move. With that, the research director wrote his report: "When a flea loses all six legs, it becomes deaf."

Potpourri and Succotash

A young married couple bought a parakeet, but all he could say was "let's neck." The preacher, who heard about it, suggested that they put his bird, who always said, "Let's pray," in the cage with the delinquent bird, and maybe it could teach the other to say, "Let's pray."

Upon putting the birds together, the couple's bird said, "Let's neck." The preacher's bird replied, "My prayers have been answered."

Three men sat on a park bench in Fort Worth. The man in the middle sat quietly as though asleep. The other two men were going through the motions of fishing. Deadly serious, they would cast, jerk their lines gently, and swiftly wind imaginary reels. A policeman wandered up, shook the man in the middle and asked, "Are these two nuts your buddies?"

"Yes, Officer," came the reply.

"Well, get them out of here before I run you all in."

"Right away, Officer," replied the man, who began rowing vigorously.

"So your new job makes you independent, eh?"

"Absolutely. I get here any time I want before 8 and leave just when I please after 5."

Two strangers were sipping their drinks in the bar of one of the plushier hotels in Miami Beach.

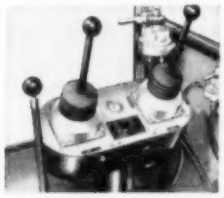
"Yes," said one, "I am a Russian. I have traveled everywhere, I have seen everything—and I want to tell you there is no place on earth like Russia. What a country! What art—What music—what culture! Yes, friend, Russia is a paradise!"

The other man eyed him sourly. "Yeah? Well, if it's so great, why the devil don't you go back?"

"Well," answered the other taking a big swallow of his drink and smacking his lips contentedly, "to tell you the truth, I just happen to be crazy about your lousy capitalistic system!"

This Shovel Makes Good Operators Look Better!

The 2½-yd. Lorain-85A Shovel has two vitally important features—available on no other make of shovel—that will send any operator's production figures soaring, with less effort, less fatigue, easier, smoother. They are:



"JOY-STICK" AIR CONTROLS

These 2 levers, through metering valves that retain the old-time normal "feel" of the machine, control all turntable operations through air power. There are fewer levers—fewer motions. Just think what this ease and simplicity of operation means in increased production. Full "Air-Ease" Power Control of crawler travel, steering and tread-travel lock also are provided.

"SHEAR-BALL" MOUNTING

Like a huge, sealed "ball bearing," this revolutionary turntable mounting eliminates forever all adjustment, maintenance and lubrication problems of old-fashioned center pin and roller designs . . . means still more time-saving on the job, more production. Field tested for more than 7 years, the Lorain "Shear-Ball" is real "reliability" in action.

There are many other Lorain-85A features you'll want to know about. Your nearby Thew-Lorain Distributor can tell them to you. And ask him about the on-the-spot Lorain parts and service facilities that are such an important plus value when you buy Lorain. See him soon.

THE THEW SHOVEL CO., LORAIN, OHIO, U.S.A.

LORAIN 85A

THEW LORAIN®

reliability in action

Enter 69 on card, page 101

No recession

in interest, enthusiasm at

42nd N.S.G.A. Meeting

ANOTHER ON THE SPOT REPORT

PLANT design, operating problems, product promotion, taxes, labor, and other management problems — all were highlights and topics of spirited discussion at the February 10 to 14 meeting of the National Sand and Gravel and National Ready Mixed Concrete Associations. Held jointly at the Conrad Hilton hotel in Chicago, these were the 42nd and 28th annual conventions of the respective groups. Widespread interest aroused by prior distribution of the program, along with the opportunity to see the biennial equipment show, had impressive results—more than 5,000 in advance registration alone. When the final figures were in, the meeting had attained a total attendance of over 7,500.

Three new top officers of N.S.G.A.—E. Phil Gemmer, president; E. K. Davison, vice-president; and F. P. Curtis, secretary-treasurer. At the right is Roy Weaver, retiring president.

As implied above, there was a wide range of important subject matter—and no phase was slighted by the industry members present. From the beginning of the first general session to the close of the last, there was no slackening of interest or attendance. Obviously the producers whose year-ago optimism had since suffered a slight setback were eager to acquire the information needed to regain full operational and economic stride, and perhaps improve upon that.

Three of the four days preceding the general sessions were devoted to meetings of committees, the Manufacturers Division of N.S.G.A., and the Exhibit Division of N.R.M.C.A. Boards of directors of each association met on the day immediately preceding the 3-day open convention, as did also a conference on operations of state and area associations. No general sessions were held on the first two days of the biennial show, which gave producer members an opportunity to visit the two exhibit locations—one at the Coliseum and the other in the ex-

the total commercial production in

W. A. Rundquist, Pioneer Engineering Works, Inc., new first vice-chairman, Manufacturers Division; J. C. McLanahan, McLanahan & Stone Corp., the division's new chairman; and Claire Laird, Eagle Iron Works, retiring chairman.

7,500 converge on Chicago for convention sessions, equipment show

Joint luncheon of N.S.G.A. and N.R.M.C.A. members, held in the Conrad Hilton ballroom.

Among those at the luncheon speakers' table are: C. B. Laird, chairman, Manufacturers Division, N.S.G.A.; Ralph Anderson, past-president, N.R.M.C.A.; F. E. Schouweiler, vice-president, N.R.M.C.A.; and E. Phil Gemmer, president, N.S.G.A.

Other officers shown at the luncheon are: Roy E. Weaver, retiring president, N.S.G.A.; M. Eugene Sundt, president, N.R.M.C.A.; E. K. Davison, vice-president, N.S.G.A.; John B. Donovan, vice-president, N.R.M.C.A.; and Fred P. Curtis, secretary-treasurer, N.S.G.A.

hibit hall of the Conrad Hilton Hotel.

President's Address In his address of welcome to those attending the convention, President Roy E. Weaver (Lincoln Sand & Gravel Co.) reminded them that it was in December, 1911, in Chicago, that this association was organized. Attendance at that meeting numbered about 50 men, compared with over 7,000 expected at this one. He pointed out that N.S.G.A. is growing in every way —its membership has reached a record—it is in excellent financial condition—its activities for the association and the industry are growing in number and importance—its safety program is increasing in scope and effectiveness. He also mentioned the re-arrangement of the geographical districts into which the membership is divided. This was necessary because of the great growth of the membership in recent years and in certain areas. The major change was the division of the 12 western states into six districts instead of the former four. Ten new member companies were added in 1957 for a total of 271, representing about 70 percent of the total commercial production in this country.

The labor situation was given special attention by Mr. Weaver, who feels that the Senate hearings on corruption in labor organizations will be so long drawn out that there will probably be no enabling or curing legislation this year. From the unions a drive can be expecte ' for wage rate increases and a shorter work week. Mr. Weaver pointed out that producers must get tougher in their dealings with unions and negotiate as a group, as was done in Los Angeles in 1955.

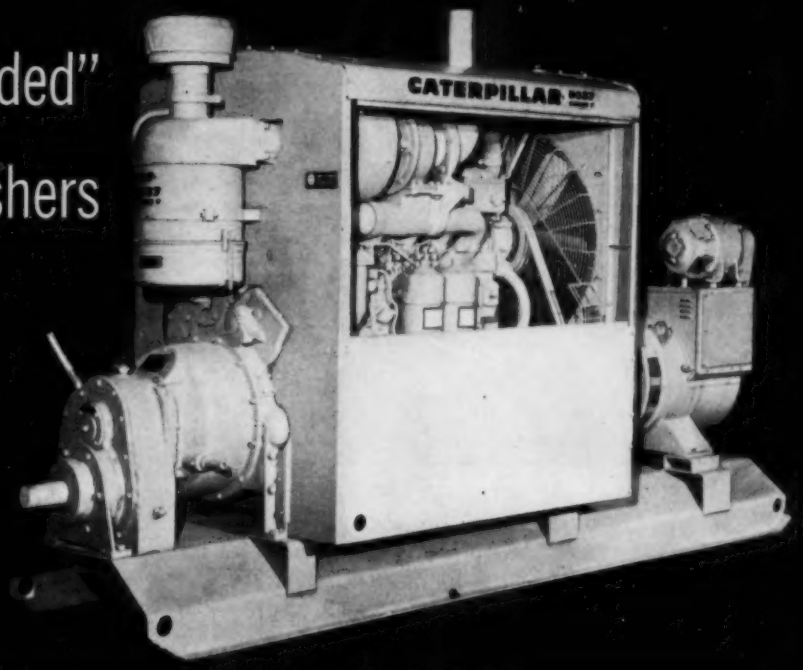
Manufacturers Division The new chairman of the Manufacturers Division of N.S.G.A. is J. Craig McLanahan (McLanahan & Stone Corp.). He succeeds C. B. Laird (Eagle Iron Works). William A. Rundquist (Pioneer Engineering Works, Inc.) was elected first vice-chairman. Other vice-chairmen are Emil Deister Jr. (Deister Machine Co.), and Roy K. Wills (Construction Equipment Div., Baldwin-Lima-Hamilton Corp.). Earl D. Stearns (Barber-Greene Co.), was re-elected a vice-chairman.

New members named to the board of directors of the division are Kennard S. Lange (Link-Belt Co.), Charles S. Weber (Thew Shovel Co.), and Ken Turner (Iowa Manufacturing Co.). Those carrying on as directors are: John E. Dunn (Allis-Chalmers Mfg. Co.), Austin K. Thomas (Chain Belt Co.), Ralph B. Utt (Western Machinery Co.), H. F. Lawrence (W. S. Tyler Co.), John F. Steffens (Ludlow-Saylor Wire Cloth Co.), and Herbert Knutden (Universal Engineering Corp.).

The Manufacturers Division of N.S.G.A. and the Exhibit Division of N.R.M.C.A. held a joint meeting Saturday, February 8, preceding the conventions. The chief subject of discussion was the recommendation to be made to the N.S.G.A. board of directors on the locations for future meetings in exhibit years.

On Monday, February 10, the Manufacturers Division held its own semi-annual meeting, at which new officers and directors were elected. It was also decided that henceforth all elections would be for one year only; the division membership has

At last! A "two-handed" power unit for crushers with transmission and generator at opposite ends



Now you can get a modern, heavy-duty Caterpillar power unit—the D337 (Series F)—with transmission at one end and a standard size generator at the other, providing both mechanical and electrical power to your crusher.

In this new Cat power unit, the transmission drives jaw and drum crushers through simple, direct connections. The electrical power from the generator permits better control of screens and conveyor belts giving an even flow of material for maximum plant efficiency.

This Cat Electrical and Mechanical Drive Unit is readily portable—can be easily mounted on a truck—and was designed for 150 to 200 ton plants. Its exclusive design affords easy maintenance because either generator or transmission may be serviced separately.

Ample engine horsepower is available in the D337 (Series F) to handle electrical requirements through a 60 KW generator and all mechanical requirements through the Cotta transmission.

Why not call your Cat Dealer today? He will be happy to discuss your power needs—follow through on the installation and stand behind your Cat equipment with the best parts and service facilities in the heavy construction equipment field.

Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U.S.A. Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BONUS FROM CAT ELECTRICAL AND MECHANICAL DRIVE UNITS

1. Top Production
2. Slashes Downtime
3. Increases Plant Efficiency
4. Eliminates Conveyor and Screen Clutches
5. Simple Power Package to Service

BY CATERPILLAR

Engine Division — Dept. PQ4
CATERPILLAR TRACTOR CO., Peoria, Illinois, U. S. A.

I would like more information about the new Cat Electrical and Mechanical Drive Unit for powering and repowering crusher plants.

☐ I would like detailed information or a dealer call since I may be in the market. I understand that I am under no obligation.

☐ I am interested in learning more in general about these units.

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Company_____

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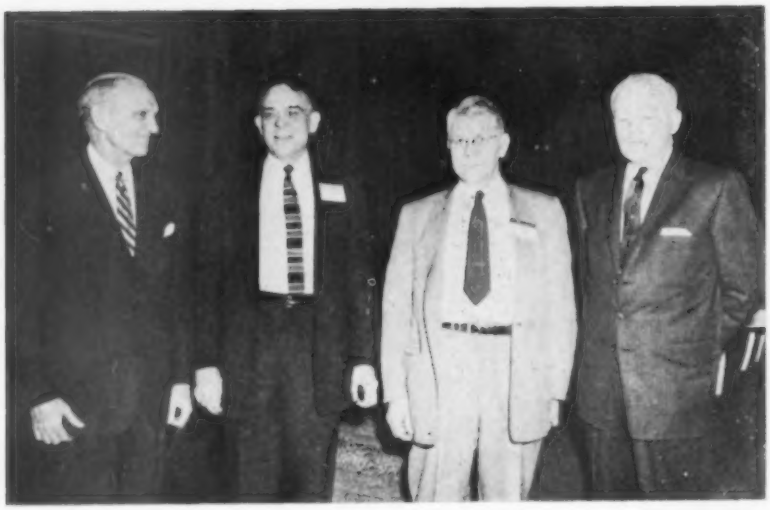


Vincent Ahearn, N.S.G.A. executive secretary; Charles Horsky, association counsel; Ewan Clague, Commissioner of Labor Statistics; and F. E. Schouweiler, vice-president, N.R.M.C.A. Mr. Schouweiler was the presiding officer at the final session, which featured the preceding three men as speakers.

grown so large that it was felt necessary to give more men an opportunity to serve in various capacities.

New Officers and Directors E. Phil Gemmer (Texas Construction Material Co.) is the new president of N.S.G.A., succeeding Roy E. Weaver (Lincoln Sand & Gravel Co.). E. K. Davison (J. K. Davison & Bro.) succeeded Mr. Gemmer as vice-president. The new secretary-treasurer is Fred P. Curtis (Lyman-Richey Sand & Gravel Corp.).

The new members of the executive committee, in addition to the above are as follows: Harold E. Bender (Azusa Rock & Sand Co.); C. G. Cooley (Cooley Gravel Co.); Joseph L. Shiely Jr. (J. L. Shiely Co.); A. H. Smith, Branchville, Md. The new members at large on the board of directors are: C. A. Barinowski (Vulcan Materials Co.); Edmond F. Brovelli (Basalt Rock Co.); Henry H. Kirwin (Eastern Rock Products, Inc.); A. H. Smith, Branchville, Md.; and Irving Warner Jr. (Warner Company).

Coming Conventions There was some discussion at the board meeting on dates and places for coming meetings. The 1959 joint conventions will be held February 16-19 at the Roosevelt Hotel, New Orleans, La. The 1960 joint convention and machinery exhibits are again scheduled for the Conrad Hilton Hotel and the Coliseum in Chicago, February 15-18. No change has been made in the schedule for later meetings. In 1961 these will be held January 15-19 in Miami, Fla. Again in 1962 the conventions and exhibits are to be in Chicago, February 12-16, where the new Exposition Hall is expected to be ready. The 1963 conventions are scheduled for San Francisco, February 18-21.

The 1958 mid-summer board meeting, which had been scheduled for Sun Valley, Idaho, will be held at Las Vegas, Nev., at the Tropicana Hotel, September 30 to October 2. No change was made in plans for later board meetings, which are scheduled as follows: 1959, September 27-30, Lake Placid Club, Lake Placid, N. Y.; 1960, October 3-6, Del Monte Lodge, Pebble Beach, Calif.

Ahearn's Report The annual report of Vincent P. Ahearn, executive secretary of both associations, was distributed to members prior to the opening sessions. This report is never intended to be a detailed account of all that the two associations have done during the last year; rather, it is a report on basic activities which affect the life of these two great industries. As in recent years, the report on 1957 covered briefly but clearly the more or less routine activities and accomplishments which are a part of its daily work. Greater emphasis was given to such subjects as the highway program, the growth potential of these industries, public relations, taxes, freight rates, the safety contests, and legal and labor developments. Most of these subjects are covered in greater detail elsewhere in this report.

The Interstate Highway Program, according to Mr. Ahearn, is going to cost much more than the amount originally authorized, and by 1960 there will not be enough money in the fund to meet the obligations of the act. Congress, as a result, faces several disagreeable alternatives—it can make direct contributions to the fund from the federal treasury; it can prolong the time for building the system from the original 13 to 20 or more years; it can reduce the mileage of the system; or it can increase the taxes on the highway user.

In addition, Congress has other difficult decisions to make and powerful forces to combat with respect to the actual disposition of the funds. It must decide whether or not to reimburse the states for free roads and toll roads which have been integrated into the highway system; and whether states are to be permitted to reimburse utilities for re-location of facilities caused by building the system. These would add another $8 billion to the cost of the program. Mr. Ahearn also pointed out that the addition of the Davis-Bacon Act to the program originally added $3 billion to its costs, and the fund has been further raided for $200 million annually to administer its provisions. Other proposals for the diversion of these funds were mentioned.

The public relations committees of the two associations, said Mr. Ahearn, have done excellent work in scarcely two years of existence. Both have had the same two main goals: (1) to help all member companies develop for their communities a program of public relations

which will help people to understand that the producer wants to be a good neighbor, and that his economic contribution is indispensable to the community's welfare; and (2) to prepare, for the use of the producer, publications which will help him to cope with the growing interest of the community in zoning statutes and regulations necessarily involving his plants.

Construction volume in 1957 was up slightly in dollar value over 1956; but, according to Mr. Ahearn, physical volume remained about the same. There was considerable variation in various fields of construction, but highway construction and school building were up 8 and 11 percent, respectively. The dollar volume of new construction in 1958, he stated, is expected to establish a new all-time figure of $49,600,000,000, or 5 percent over the 1957 record, a figure second only to 1955 in physical volume. Highway work and residential building are expected to lead the way. Any action taken to relieve unemployment by public works would swell the above total.

Mr. Ahearn also discussed the growth potential of the United States and its probable effect on private and public construction requirements. By 1967 this country is expected to have a population of about 202,000,000 people, and all forms of construction will have to be expanded to meet their needs. Both the sand and gravel and ready-mix industries will have to increase their output, and they will be subjected to increased zoning pressures due to the encroachment of residential areas.

Conditions in the sand and gravel industry in 1957 were spotty, said Mr. Ahearn, and it is doubtful if total production exceeded the 1956 record of 625,382,474 tons, valued at $595,520,896, according to the U. S. Bureau of Mines. In 1956 commercial production accounted for 420,075,930 tons. Mr. Ahearn believes that commercial sand and gravel activity in 1957 and 1958 will probably be on substantially the same level as in 1956.

Walker's Report In his report to the boards of directors of the two associations, Stanton Walker, director of engineering, reported a busy year. He qualified this statement by saying that engineering activities of the associations have been continued in the pattern found most productive in recent years. The Joint Laboratory staff at the University of Maryland has been active in furnishing technical information and advice to numerous member companies and users of the products. Personnel training short courses have been expanded, and members of the engineering staff have participated in short courses sponsored locally. While publications were not as numerous in 1957 as previously, qualitatively these are considered satisfactory. Representation of the industries in many outside technical organizations has been continued.

Mr. Walker described the work pursued by each member of his staff, and commended the fine cooperation received from the University of Maryland, which has continued since it was established almost 20 years ago. He presented detailed summaries of the more important investigations being carried out, including both the cement investigation and studies of slag cements, flexural strength, and aggregate evaluations. He discussed research fellowships in relation to the laboratory research. He gave a complete summary of the short courses over the 12 years these have been held.

Mr. Walker's full report was presented to all members. In addition to the above data there was included in this report a list of all publications, convention papers, and technical information letters issued to both association memberships during the year. He also briefly covered the work of committees, including the Joint Research Committee, the N.S.G.A. committees on operating problems and on ballast, and the N.R.M.C.A. committees on standards for ready-mixed concrete

Craig McLanahan, McLanahan & Stone Corp., discusses a point with O. R. Wormuth, McIntosh Transit Mix Corp., Binghamton, N. Y.

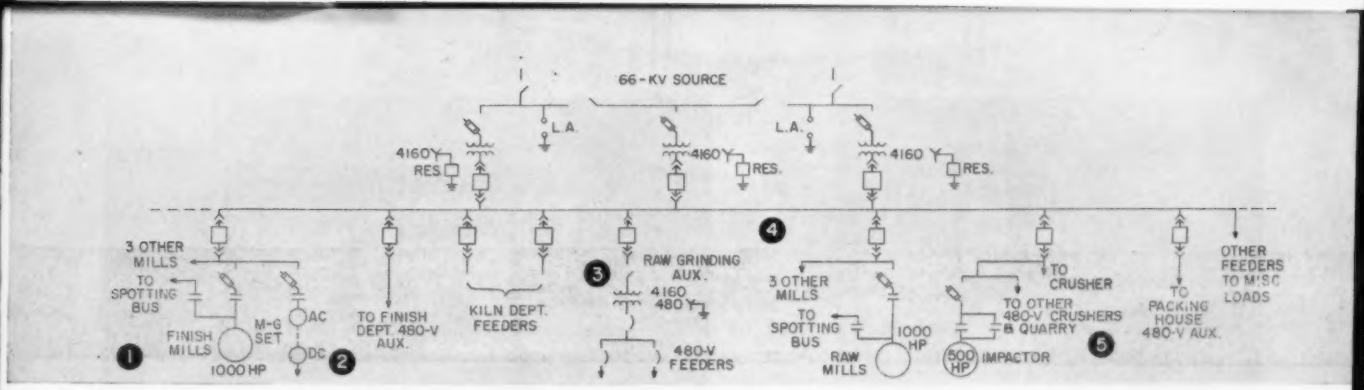
W. E. Hole Jr. and Bill Hineman, American Aggregates Corp., Greenville, Ohio.

ENGINEERING REPORTS:

1 **DRIVING BALL MILLS,** are eight G-E 1000-hp synchronous motors. Spotting features facilitate ball replacement.

2 **SMOOTH KILN SPEED CONTROL** is achieved with G-E d-c drives. These highly reliable 125-hp dripproof motors employ a 3:1 speed range.

3 **DUST PROTECTION,** for G-E load-center unit substations which supply 480-v operating power to raw and finish grinding department auxiliaries, is provided by this separately ventilated and pressurized control room.



Lone Star's Nazareth plant "grows" into new quarters, boosts capacity 65%

General Electric system-engineered equipment helps solve power distribution problems, meets rugged mill drive requirements

To meet increased cement demands of areas served by Lehigh Valley producers and to reduce production costs, Lone Star Cement Co. is modernizing and expanding its Nazareth, Pa. plant. And they are doing it in a well planned manner—not by overcrowding and overloading present facilities—but by constructing an adjacent, modern plant and "growing" into it. This has increased capacity from 6000 to 10,000 bpd with virtually uninterrupted production.

GENERAL ELECTRIC ENGINEERS worked with Lone Star in designing a power distribution system which reduces costs by minimizing voltage drop and initial investment, and by getting maximum efficiency from operating equipment. To carefully integrate the power system with rugged ball-mill torque and speed requirements, G-E engineers helped specify characteristics needed for eight 1000-hp, 4000-v, high-torque G-E drives in the raw and finish departments.

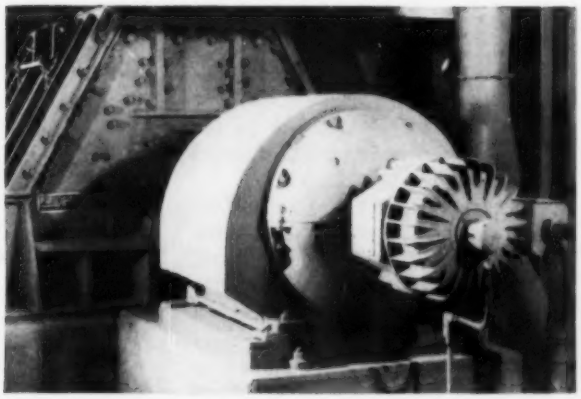
CENTRALIZED CONTROL is a modern feature of the new facilities. Ball-mill control, 480-v grinding department load-center unit substations, and plant 4160-v metal-clad switchgear are all located in one pressurized room adjacent to the ball mills.

WHEN YOU PLAN TO EXPAND OR MODERNIZE, take advantage of G-E engineering services. Contact your nearest General Electric Apparatus Sales Office. General Electric Company, Schenectady, N. Y. 658-21

Engineered Electrical Systems for the Rock Products Industry

GENERAL ELECTRIC

4 DISTRIBUTING POWER to all mill departments is this lineup of G-E 4160-v metal-clad switchgear. Dependable system protection is provided by its 250-mva interrupting capacity.



5 HEAVY STARTING requirements of reversible impactor for secondary crushing are matched with powerful G-E 500-hp wound-rotor induction motor with enclosed collector rings.

Enter 76 on card, page 101

Walter B. Evans Jr., American Aggregates Corp., accepting the Rock Products class B safety trophy from Roy E. Weaver. This trophy was won by the Hamilton-Symmes plant.

Larry Kickels, Ryno Sand and Gravel, and Alden White, White's Gravel, Watervliet, Mich., examining an exhibit.

and on cement. An additional important part of his work, he said, was representation on the technical committees of other organizations, such as A.S.T.M., A.C.I., Highway Research Board, A.R.E.A., and other national organizations interested in aggregates and concrete.

Luncheon Speaker *Man Looks at a Small Planet* was the subject of an address by Dr. Joseph Kaplan, chairman, U. S. National Committee for the International Geophysical Year, and principal speaker at the joint luncheon attended by a capacity crowd of nearly 1,100. This committee was established by the National Academy of Sciences, and is responsible for our program of geophysical research conducted during 1957-1958 in co-operation with 66 other nations. Dr. Kaplan is the son-in-law of H. G. Feraud, secretary of the southern California sand and gravel and ready-mix associations.

Dr. Kaplan briefly explained the work of his committee and mentioned the most important lessons to be gained from its activity. He feels that science is for the first time looking at what lies 20 years ahead, and that it will be more able to predict confidently the effects of hitherto unknown forces in terms of practical results. These particularly affect safer flying by the application of radio signals, radar, and other little known manifestations of the upper atmospheric levels. Studies being made include oceanography, seismology, meteorology, and other highly technical research in full scale at the geographical points most ideal for such study.

Business Conditions A group of panelists representing various sections of the country took the floor next and discussed the following questions: *How Much Business Will There Be for the Sand and Gravel and Ready Mixed Concrete Industries in 1958? What Happened in 1957 and Why?*

C. G. Cooley (Cooley Gravel Co., Denver, Colo.) said that business in 1958 will not be much different from 1957. Interviewing operators in the Denver area revealed that their business in 1957 ranged from 10 percent lower to 10 percent higher than in the previous year. The average operator feels that 1958 will be pretty much the same as 1957. After some fall-off in business during the first half of 1958, the second half is expected to pick up and bring the year's total volume up to last year's level.

Herbert G. Jahncke (Jahncke Service, Inc., New Orleans, La.) felt that business in 1957 in the New Orleans area was good, even though the road program didn't come up to expectations in 1957. More road work is expected in 1958; therefore, the sand and gravel and ready-mix business is expected to be even better than it was last year. Conditions are spotty in some areas; but, on the whole, the South should enjoy good volume in 1958. A sharp upturn is expected in the last half of 1958. There is a general feeling of optimism in the area because a decided increase in homebuilding is anticipated due to the rapidly growing population in the area.

Norman J. Fredericks (Koenig Coal & Supply Co., Detroit, Mich.) said that the sand and gravel and ready-mix business in the Detroit area is in a depressed and demoralized state due to a sharp decline in business in 1957. The cement companies estimate that the ready-mix volume in Michigan declined about 20 percent. The combined estimate of sand and gravel and ready-mix plants in Michigan is that the decline was about 30 percent. This almost parallels the auto industry's decline of 35 percent in 1957. As for 1958, it is felt that the first half will get a little worse, then the last half will start improving. Some signs of optimism are beginning to show now where nothing but pessimism prevailed only a couple of months ago.

E. J. Nunan (Buffalo Slag Co., Inc., Buffalo, N. Y.) was happy to

report that business in the Buffalo area had a pretty good year in 1957, and 1958 is expected to be even a little better. Highway construction was responsible for a good year in 1957, and it is expected to continue at a large volume in 1958. Housing construction is expected to rise in 1958, too. Mr. Nunan said that it is important to do a good selling job if we want to improve business. The business is there, but we have to go out and get it. "Wipe the gloom off of your face; you can eventually talk yourself into a depression."

Richard K. Humphries (Pacific Cement & Aggregates, Inc., San Francisco, Calif.) reported that business was down about 15 percent in California in 1957, but felt it might not be such a bad thing because it resulted in some needed housecleaning in the industry. Many operators have been forced to go out and get newer and more efficient equipment. Mr. Humphries declared that improvement in 1958 is anticipated because there will be more highway construction in 1958 than there was in 1957. Housing looks as if it is improving, and public works business will be big.

J. L. Shiely Jr. (J. L. Shiely Company, St. Paul, Minn.) said that in the Minneapolis area it is estimated that business will be up 5 percent in 1958. Economic conditions are good in this area.

Safety Awards A feature of these conventions is always the awarding of safety trophies to the winners of the N.S.G.A. safety contest. Winners for 1957 were: Class A (more than 500,000 tons per year output) — Warner Company, Van Sciver plant, Philadelphia, Pa.; Class B (200,000-500,000 tons) — American Aggregates Corp., Hamilton-Symmes plant, Greenville, Ohio; Class C (less than 200,000 tons) — McKee Bros., Inc., Ramsey plant, Ramsey, N. J. The *Rock Products* trophies were accepted by Irving Warner Jr. for the Warner Co., by Walter B. Evans for the American Aggregates Corp., and by A. D. McKee for McKee Bros., Inc.

Highway Program F. C. Turner, deputy commissioner and chief engineer, Bureau of Public Roads, U. S. Department of Commerce, read a paper entitled *The Interstate Highway Program Moves Ahead.* The Federal-Aid Highway Act of 1956, he asserted, represents the greatest highway improvement program in our history. It marks the first time that we have been required by law to set out to build a specified highway system in a given time interval to a given standard.

Reviewing what has been done on the highway program to date, it is found that at the end of the first full year we are right on schedule. The goal set for the first year was $2,250,000,000 in federal obligations for construction, and the surveys, plans, and right-of-way acquisition, which, of course, must precede actual construction contracts. On June 30, 1957, actual obligations totaled a few million dollars in excess of this target.

In the 19 months since the passage of the Federal Highway Act in June, 1956, a total of 3,323 miles of construction has been advertised, put under way, or completed on the Interstate System, at an estimated cost of $1,800,000,000, including nearly $1,600,000,000 of federal funds. Naturally, a considerable amount of planning, land acquisition work, etc., took place during this period, too. During the first 19 months of this new program 37 percent of the federal funds obligated for the Interstate System went for right-of-way and engineering. The totals were $659,000,000 and $253,000,000, respectively. Of course, these percentages are declining rapidly and will decrease in later years to about half this percentage.

Because individual states were in various stages of preparation when the Federal Highway Act was passed in 1956, the program has not had an equal impact, state by state, although it is on schedule for the country as a whole. However,

T. F. Hill, Trux-Mix Concrete Co., and D. L. Olson, Gifford-Hill Co., Dallas, Tex. at the equipment show.

Ronald Kost, and Floyd Desing, Kost Bros., Inc., Moorhead, Minn., with Don Massey, Werco Steel Co.

Operating the controls of a model power unit at one of the exhibits at the equipment show is Robert W. Palmer, Hartland Sand and Gravel Company, Hartland, Wis. Russel Fredrickson, also of Hartland Sand & Gravel, looks on.

progress is now tending to even up as more and more states bring their early programs and plans to the point where bids can be asked.

Public Relations *The Public Relations Program of the Sand and Gravel Industry Thus Far* was discussed by E. K. Davison (J. K. Davison & Bro.), chairman of the Committee on Public Relations. This committee, he said, was formed in August, 1955, in response to an evident need of many sand and gravel producers for guidance in coping with the growing restrictions on the mineral extraction industries. The work of the association has been concentrated so far on (1) the relationship of the sand and gravel producer to zoning laws; and (2) the obligation of the sand and gravel producer to work his land and restore his land in harmony with the public interest.

Mr. Davison described the substantial volume of literature which has been published on this subject, especially the booklet entitled *The Zoning Problem and its Significance to the Sand and Gravel Producer*, which was issued recently. This comprehensive study of the subject was prepared by V. P. Ahearn Jr. A brochure is now under preparation which will depict some of the fine land restoration projects of member companies.

The committee at its recent meeting outlined four subjects for study and future treatment.

1. An evaluation of the contributions of the sand and gravel industry to the economy
2. Continuing studies of zoning laws and their application
3. The public relations difficulties raised by high truck traffic densities, overloading, and careless driving of trucks often associated by the public with the sand and gravel industry
4. Evaluation of the nuisance factors which are many times associated by the public with sand and gravel plants.

In closing, Mr. Davison stressed the fact that the program of the Public Relations Committee is designed to provide the members who choose to use it with the best information and advice obtainable. But it must be remembered that the intelligent and responsible application of that advice can be made only locally.

This talk was followed by the new film on land restoration produced by the American Aggregates Corp., Greenville, Ohio. This film shows the progress made to date on the company's land restoration program, which was first fully described in the October, 1955, issue of PIT AND QUARRY, pp. 80-91. This program involves planning far ahead, so that excavating of the material is done with later restoration in mind. The film shows how sand and gravel availability draws industry into an area. The reclaimed land is being used for summer and permanent homes on lakes, picnic grounds, industrial sites, and even (near Dayton, Ohio) for a new city reservoir.

Zoning *How Do Zoning Boards Get Their Power; How Do They Use It?* was the subject of Richard E. Hole, attorney, of Greenville, Ohio. He observed that some sort of regulation of zoning procedures is necessary. Since the Supreme Court in 1926 first upheld a village zoning ordinance, this power has been consistently upheld by the courts on the basis that private freedom must yield to the good of many.

Mr. Hole said that any producer faced with the possibility of a zoning problem should present his case to the local zoning commission as soon as possible in order to get fair treatment. The men on these commissions are very busy and do not know a producer's problem; and once an ordinance reaches draft form, it is difficult to get it changed. One case was cited in which a company had a zoning expert get up a proposed ordinance, and the local committee adopted it almost verbatim.

In Ohio, according to Mr. Hole, a zoning ordinance, once in effect, is in the hands of a board of appeals. Anyone going before this board must realize that it is hard to influence, and he must be well prepared with information. Zoning boards are made up largely of home, farm, and other land owners whose primary interest is the protection of their property. The producer must show them that good sand and gravel deposits are scarce; and that once they are built on, they are gone forever. Showing figures on the added cost to a community of aggregates from more distant sources is also effective.

Special care must be exercised with reserve deposits not being worked. Mr. Hole cited the case of a coal company in Ohio. Here a zoning board took action in September, and in two months the company lost the use of this reserve. In a similar case a crushed stone company lost the use of property in reserve across the road from its quarry.

In closing, Mr. Hole stressed the fact that mining companies are no

longer going to be permitted to tear up and ruin the countryside. The industry must organize its policies and carry out rehabilitation in order to get fair treatment from zoning commissions.

Labor A comprehensive review of recent developments in the labor picture were presented by Charles A. Horsky, counsel for the associations. Highlighted were recent N.L.R.B. and court developments affecting group bargaining by employers; illegal picketing; secondary boycotts; and President Eisenhower's labor recommendations.

The Supreme Court has recognized the legality of multi-employer group bargaining through its confirmation of the N.L.R.B. certification of such a group last year. However, the labor board has set up restrictive rules in determining whether a multi-employer unit is appropriate. Basically, the test is whether there has been a substantial history of bargaining by the parties on that basis. There is still considerable uncertainty as to what constitutes a "substantial" history.

Another development, in the same litigation wherein the Supreme Court recognized the certification of multi-employer units, concerned employer lockouts. It was found that preservation of the integrity of such a unit was sufficient justification for a lockout on the part of the remaining members of the unit when one member is being struck.

With respect to secondary boycotts, particularly "hot cargo" clauses, it was pointed out that the labor board had formerly ruled these to be valid—a decision that was upheld in lower courts. However, more recently the board has ruled that, so far as common carriers are concerned, "hot cargo" clauses are invalid and do not constitute a defense to a secondary boycott charge. The matter is now before the Supreme Court, and a definite answer to this question, not only as to common carriers but in any Teamster contract, should be provided soon.

The Administration's current proposals for amendments to labor legislation deal principally with secondary boycotts and illegal picketing. It also calls for requiring unions, and in some cases employers, to make financial dealings public, and to impose penalties for misuse of union funds.

Mr. Horsky feels that Congress is undoubtedly inclined to do something in the labor area. He cautioned, however, against the assumption that the emphasis would be anti-union. More probably, it will be directed toward protection of the individual union member—a protection not only against corruption of union officers, but also against dealings between representatives of labor and management plus unfair labor and management practices.

Economic Factors With the disappearance of the gold standard 25 years ago, a search developed for an alternative stabilizing factor on which to base economic transactions. The most important factor which has entered the picture since that time has been the use of statistics, namely index numbers. This statement was made by Ewan Clague, commissioner of labor statistics, in a discussion of anniversary wage increases and application of the cost-of-living index.

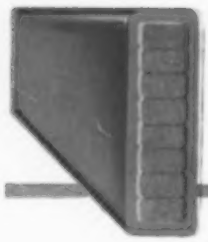
Actually, Mr. Clague pointed out, the consumer price index so widely known is not a cost-of-living index but a phase of the latter. An index probably more widely used in industry is the wholesale price index. Although initiated in the World War I years, the consumer index played only a small role in the stable economy of the 1920's. It underwent a revision in the 1930's; and during World War II it became a guide for wage and price controls. When controls were removed in 1946— followed by two years of sharp inflation—the index rose by 32 percent.

In 1948 a new era in wage negotiations started with the famous GMC-UAW contract—one in which the consumers price index was more closely applied than ever before in its history. Although other labor and management was skeptical about this contract, the Korean War created a wide acceptance of the idea. Presently, it was estimated, there are about 4,000,000 workers under contracts in which wages and salaries are directly related to the CPI. This fact imposes a great responsibility on the labor bureau staff to maintain the utmost accuracy in the index, the speaker stated.

Among the factors which make the job difficult are the seasonal elements. Fruits and meats with seasonal marketing have a direct effect on the index—lower prices when the commodities are plentiful, and higher at other times of the year. These variations have a strong impact on labor cost. A contract based on one month could save an employer a certain amount per hour, as compared with another month. In essence, Mr. Clague pointed out, the variations do not constitute a weakness in the index —the problem is that users are putting demands on it which it was not designed to accommodate.

In summary, Mr. Clague stated that the spread of wage escalation

F. H. Poe, Tampa Sand & Material Co., Tampa, Fla.; and C. H. Denny Jr., Denny Concrete Products, Gainesville, Fla.



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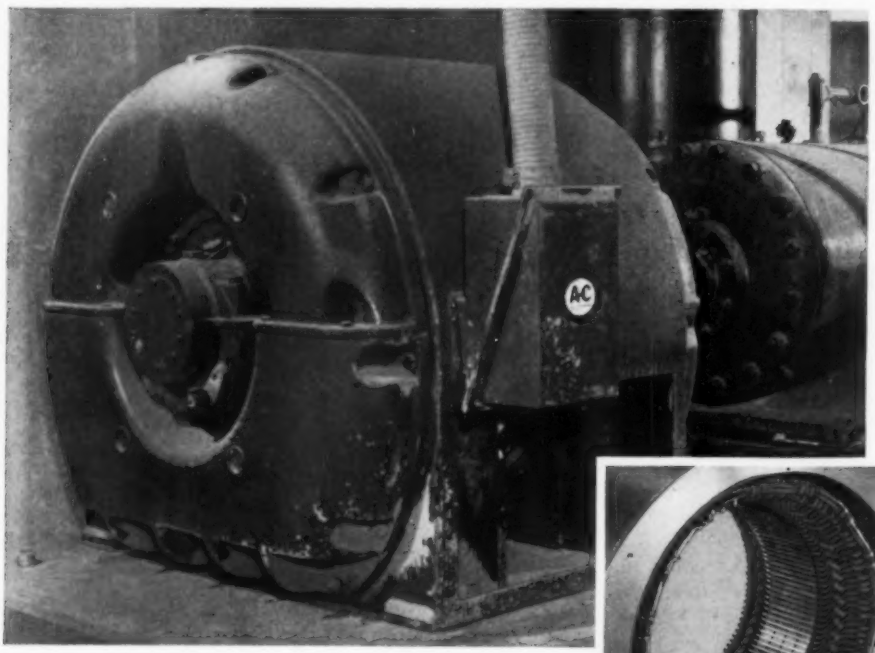

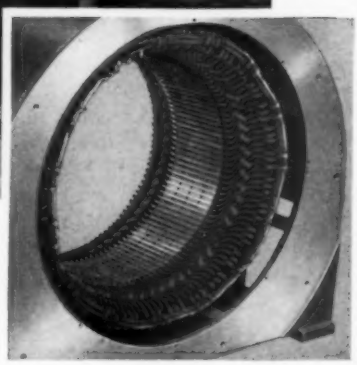

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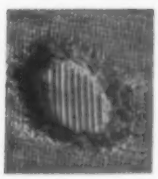

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Don Radtke, Bostrom Mfg., and Herb Hasbrouck, Hasbrouck Sand Co., Titusville, Fla.

O. J. Southard, Hoosier Ready Mix Corp., Clinton, Ind.; Wm. Hendrickson, Hendrickson Mfg. Co.; and Max Myers, Standard Materials, Terre Haute, Ind.

has been partly due to rises in the CPI and partly to the development of long-term contracts in collective bargaining. Stabilization of the index, with a return to annual bargaining, would undoubtedly lessen the interest of management and labor in wage escalation. However, if long-term contracts continue to be a feature in industrial relations, some form of wage escalation is almost certain to be contained in them. If that is the case, more attention must be given to the statistics upon which wage escalation is based.

McClellan Investigation An annual highlight of the closing joint session of the groups — the Washington scene as described by Vincent Ahearn—was, for this meeting, a close analysis of one element in that scene—the McClellan investigation.

With respect to the head of that Senate committee, Mr. Ahearn described Senator McClellan as a widely respected legislator who has considerable courage and a fine record of public service.

It was pointed out that a case has already been made against union corruption. However, current public interest in satellites and space may preclude sufficient interest in the committee's work to provide the attention it deserves.

A significant question is: "Who will call the turn when corrective legislation reaches the floor of the Senate?" Many congressmen owe their membership in those bodies to labor support, and the President has indicated that he opposes alleged "labor-busting" features of the Taft-Hartley Act—despite the fact that no unions have been "busted" under that legislation.

It was indicated that probably the President has lost his leadership in the labor area—due to relinquishing his prerogatives of selecting an Administration labor leader to Mr. Meany of the AFL-CIO. (Significantly, no labor leader apparently was anxious to espouse the labor cause as a member of the Administration's team.)

Mr. Ahearn placed particular emphasis on the responsibility of both Congress and employers for the welfare of the individual working man, whether he be union or not.

Although employees show a record of trying to free themselves from union shackles and are trying to eliminate the union shop from employer-union contracts, unions and employers are equally guilty of depriving the individual worker of his own choice concerning union membership.

Although Congress struck at aggregations of power when it passed anti-trust laws, labor unions have enjoyed a singular immunity, and as a result, a crippling power with which they can make a worker join their ranks or deprive him of his living. Involuntary membership in a union which is *not* representative of the workers is in sad contrast to democracy. Significantly, employees are behind the filing of most unfair labor practice petitions—and against the unions.

Any producer who fails to read his employer-union contract, it was emphasized, and thereby signs away the rights of his men as to a choice on union membership, has dismally failed in management responsibility.

Union terrorism and harassment have long been in the record as basic to the existence of unions and to their ability to keep the rank and file members strictly in line. Despite the unlamented departure of Mr. Beck, it was noted that Mr. Hoffa cannot be regarded as an improvement. Although the power of union leaders over their members, as well as the general public, has been brought out for all to see, it is interesting to note that Mr. Eisenhower's labor message to Congress ignores any correction of that power.

Railroad Shipments *Is Sand and Gravel Transportation by Railroad Beginning to Be Only a Memory?* was the provocative title of a paper presented by Ellis E. Jensen, Ph.D., president of the Janesville Sand & Gravel Co., Janesville, Wis. He pointed out that

L. A. Rhodes, Stedman Foundry & Machine, and D. G. Russo, Russo Sand and Gravel, Pittsburgh, Pa.

the two industries represented at these conventions either ship or receive 10½ percent of all carload-lot rail traffic. Sand and gravel, crushed stone, and cement are three of the ten leading commodities so transported. Should these materials cease to move by rail, he stated, not only these industries, but also the railroads and the entire public would suffer.

Great concern was expressed by Mr. Jensen over the attitudes of the railroads and of the federal and state regulatory commissions toward this traffic. Only 48 percent of all inter-city freight traffic is now moving by rail, compared to 57 percent five years ago and 75 percent in 1930. In sand and gravel the loss has been much worse, in 1930 about half of it was rail shipped, in 1953 it was 19.8 percent, and now it is about 14 percent. This situation, he said, is largely due to the belief on the part of regulatory bodies that sand and gravel movement is unprofitable because it is a short-haul movement, and it is being abdicated to trucks. In a table he showed that, as a result of this policy, the average distance of rail hauls has increased from 243 miles in 1900 to 351 miles in 1940, and to 431 miles in 1955.

It is Mr. Jensen's firm conviction that the only workable solution for the railroads' problem is not to thin their traffic further, but to restore density. As they now move most of the long-haul goods, they can get density and fuller utilization of their hauling capacity only by recovering much of the short-haul traffic they have given up. This change in the rail haulage picture, he believes, was due to (1) overpricing of the service; and (2) to the belief that short-haul costs are higher than they actually are.

Also, much of the diversion from rails to trucks does not make sense because railway shipments are the more economical of the two. Contributing factors are that the rails are now expecting freight shippers to absorb losses in passenger business, and that they are forced to maintain runs which show large losses. The subsidization of trucks and airlines by the government does not help their problem.

The new proposed rate increase, said Mr. Jensen, will do no more good than the many previous ones; therefore, other remedies must be found. The rails claim that they lose money on short hauls, but he believes they are misled on their actual costs. Also, their use of the ton-mile return figures is not realistic as to sand and gravel which, because of its great weight, would show up much better by car-miles. He made several suggestions for the improvement of the railroad situation, as follows:

1. That the ICC overhaul its cost finding methods, and abandon current figures

2. That state regulatory bodies explore the potentialities of short-haul traffic and allow the rails to drop unprofitable passenger trains

3. That the railroads re-examine the short-haul picture and the long- and short-haul rates on specific commodities, including sand and gravel, and renegotiate with the Railway Brotherhoods on wasteful work rules

4. That the Railroad Brotherhoods be willing to negotiate on these work rules on the basis of known facts, which, many of them reportedly seem willing to do

5. That Congress amend the National Railway Act of 1928 to better serve the public interest, by eliminating existing inequities

6. That sand and gravel producers refrain from asking for rail rate reductions to points where the existing rate is moving the goods; that they help the carriers by giving them good loads

Mr. Jensen stated that his company put in track scales 45 years ago, and that they have paid for themselves many times over.

Taxes In presenting features of *Recent Tax Developments Affecting Sand and Gravel and Ready Mixed Concrete Producers*, John T. Sapienza, counsel for the association, placed them in three categories—legislative, judicial, and administrative.

With respect to the first, a question often considered is that of the possibility of a tax reduction this year. Last year the corporate rates were extended, and the first of this year the Secretary of the Treasury asked for another extension. If the present recession holds, Mr. Sapienza stated, there is a possibility of a tax reduction. In fact, bills concerning that point have already been introduced. Speculations on possible tax cuts reflect a drop to 50 percent in corporate rates, to 1½ percent for transportation tax, and an across-the-board cut of 5 percent in individual tax.

Mr. Sapienza also noted the pending HR 8381, which concerns aggregation of mineral properties for tax purposes, plus a revision to the 1954 code in order to allow fiscal year taxpayers the benefit of the 1954 portion of their taxable years in computing such deductions as percentage depletion. Possible relief for small business may also be provided through the allowance of accelerated depreciation on used

property in amounts up to $50,000 per year for five years. Currently, only new property can be so handled.

In another area, the Treasury Department has recommended legislation defining a "cut-off" point for depletion purposes in the cement and the brick and clay industries. It was noted that there are signs of growing opposition — in Congress—to percentage depletion allowances.

In regard to judicial developments, Mr. Sapienza pointed out that litigation between taxpayer-operators and the Treasury Department has been universally favorable to the former—on the matter of ordinary treatment allowable—during the last year.

There have been no outstanding administrative developments in the tax area. Final regulations under the 1954 code have not been issued, due largely to the results of brick and tile and cement court decisions. Industry representatives have presented objections to the Treasury's proposed revisions of Bulletin F (on depreciable assets), and, in fact, objections to the use or issuance of any such bulletin. It was noted that considerable attention is now being paid by revenue agents to the matter of salvage values—an issue which was not significant until 1954, when the code provided for accelerated depreciation. On the matter of expense accounts and reimbursement for them, the revenue service will start making close examination of the 1958 returns.

Management Problems E. Phil Gemmer, presiding officer, presented a series of questions on management problems to a five-man panel. In this group were Eugene J. Halter (J. K. Davison & Bro.); Henry H. Kirwin (Eastern Rock Products, Inc.); John W. Murphy (Union Sand and Gravel Co.); J. H. Reid (Consolidated Sand and Gravel, Ltd.), and Mr. Sapienza, association counsel.

In answer to a query on the advantages of turning in used or new equipment, as compared with outright sale and purchase, Mr. Murphy replied that the latter, until recently, gave the benefit of capital gains tax rates on profit realized. In view of the trend toward closer scrutiny of capital gains, he suggested that a trade-in may avoid disturbance of tax returns filed.

W. Barry Ratliff, Ann Arbor Construction Co., Ann Arbor, Mich.; Carl Broughton, Carl Broughton Sand and Gravel Co., Greeley, Colo.; and Milo West, Lewis & West, Eldorado, Kans.

On the question of what can be done to reduce the cost of liability and compensation insurance — which adds, on the average, 5 percent to the payroll—Mr. Kirwin stated that operators are unfortunately prone to accept insurance cost as a negligible part of operating costs. He emphasized that it is only good management to see that full value is received for each dollar spent in this category. Toward this end, experienced personnel in his firm make a careful analysis of every factor in all policies.

Mr. Halter replied to a question on whether sand and gravel used in an allied operation (*i.e.*, ready-mixed concrete) should be charged at full cost by the producing department. It was noted that there are variances, but in order to avoid inter-company profit, a transfer at pure cost might be preferable. During a subsequent discussion period it was brought out that the percentage depletion factor must be considered. If a competitive price is used as "cost" to the "buying" allied operation, the producing operation will get the benefit of percentage computation on the full amount.

Mr. Reid was asked to discuss the factors to be considered in enlarging or building a new plant. Emphasis was made on the point of developing a market study on a long-term basis. It was added that expected profit should be considered in terms of the return derived from assets used in the business.

On the possible value of monthly profit and loss statements to seasonal operations, the speaker indicated that these do not provide an accurate picture of the off months — which are relatively heavier in expenses — but they do serve for purposes of comparison with the preceding year.

Several questions were raised from the floor on transportation tax, salvage, and depreciation. With respect to the first, it was suggested that a hired truck operating on the producer's own property should be considered as non-taxable. Shipments made to state or municipal governments are non-taxable, but the producer should keep records for proof of destination. Many other points on this matter, it was noted, are explained in the transporation tax booklet prepared by N.S.G.A.

On the matter of whether contractors commonly depreciate equipment faster than producers, the point was underscored that each taxpayer has the right to depreciate on the basis of his own experience.

During the discussion on salvage, it was brought out that while the Treasury Department leaves the setting of salvage value to the taxpayer, it calls for adherence to actual experience. In setting up salvage on newly-acquired equipment, prior history should be referred to. While under the declining balance method, the full value is depreciated with no reduction for salvage, it is nevertheless required that deductions be carried at a reasonable salvage value.

Severance Taxes Sand and gravel producers were warned by Harold M. Lacy (Gifford-Hill & Co., Inc.) against a common practice in a talk on *Severance Taxes — A Continuing Threat to the Sand and Gravel Industry*. He said that five states are now actually collecting severance taxes from this industry but none of them calls it that. In Arkansas the ½ cent per ton tax was raised to 1 cent in 1957, and there is a 3 percent general sales tax. Louisiana has had a 3 cent per ton severance tax since 1946 and it also has a 2 percent sales tax. New Mexico has a ½ percent severance tax, a ½ percent manufacturer's tax, and a 2 percent general sales tax. Washington has a "business tax" of ⅘ percent and a 3⅓ percent sales tax. West Virginia has a "gross sales tax" of 4¼ percent on sand and gravel, of which 2¼ percent is really severance tax. New York has no severance tax, but local municipalities have them, averaging 1 cent per cu. yd. up to $2,000 annually.

Texas, said Mr. Lacy, is looking for new sources of revenue. In Indiana a bill for a ½ cent per ton tax was defeated in 1957. In Michigan, Nebraska, and Tennessee bills for new taxes are proposed every year, but so far they have been defeated. The same is true in Ohio, where such a bill was defeated by the concerted action of producers. Similar bills are constantly coming up in other states, and producers and their state and local associations must watch for them and be prepared to fight them. The necessary facts, he emphasized, must be ready before a bill is introduced. According to Mr. Lacy, such taxes are difficult to collect because of wayside and contractor production. They are also unfair unless all other natural resources are included, and if the tax is levied on dollar value of production, rather than on tonnage.

Insurance Retirement Programs Kenneth E. Tobin Jr., associate executive secretary of the associations, briefly described how the N.R.M.C.A.-N.S.G.A. group insurance plan works to benefit all participating companies and their employees. He said that the plan is the finest in existence and includes all quantity discounts and personnel family coverage. There has been no increase in rates in the last five years, except to take care of these additional items. So far, 90 percent of the company members have approved the plan. A 15 percent dividend has been returned on the 1957 payments, and it is contemplated that a larger dividend will be paid in the future if the accident rate does not increase. About $5,000,000 of this insurance is now in force in the two associations. Among the benefits afforded is full tax deduction certificate depending upon classifications.

In a report to the combined boards of directors at an earlier session, William Moore, Boston, Mass., chairman of the joint committee on the insurance-retirement plan, reviewed the record of progress, made in the five-years the former has been in operation. In this period $102,000 has been paid in claims, and costs last year were reduced in the amount of $24,000 by dividend payments. At present 73 member companies are insured under the plan.

Mr. Moore also reported on the group retirement plan, which has been fully described in a booklet sent all members. He said this plan is the finest type possible, and can be even more beneficial if special provisions are incorporated to cope with particular problems arising in each individual company. He described procedure of administration, stating that Donald Shepherd and Company, Quincy, Mass., plan consultant, will co-ordinate and assist in the design, installation, servicing, and administration of the plan for each company.

OPERATING AND ENGINEERING PROBLEMS

Gravel Beneficiation Until about 10 years ago the field of beneficiation for gravel was a limited one. This point was brought out by W. L. Price, engineering manager, Keystone Division, Dravo Corp., Pittsburgh, Pa., in his paper on *Current Development in Gravel Beneficiation*.

However, during the last 10 years, four different processes have been introduced to the sand and gravel industry—heavy media separation, jigging, rising current classification, and elastic fractionation. The first three had already been widely adopted in the coal industry before their adaptation to gravel processing. The fourth was developed solely for gravel, and depends on the typical rounded shape of gravel for its effectiveness.

A situation which led to the first use of H.M.S. in gravel operations was the necessity for upgrading local gravels destined for construction of a Royal Canadian Air Force base in Manitoba during 1948. Engineers looked to mining experience and successfully applied this method. It was soon followed by the Dravo Corporation in 1949, which mounted an H.M.S. plant on a barge behind a dredge to handle a river deposit. Interest created by this installations resulted in the erection of several more, and by 1958 13 such plants were being operated in the sand and gravel field.

Since it was recognized that this process does not solve all problems, another procedure came under study—standard jigging. In 1954, the McGrath Sand and Gravel Company, Chillicothe, Ill., installed the first diaphragm-type jigs used in the treatment of gravel. Sufficient product improvement was evidenced to lead other operators to try the method, and by the end of 1957 there were 27 different jig installations. A comparison of H.M.S. with jigging became more difficult with the recent introduction of the Baum air-operated jig. Although it is more complicated and more expensive than the diaphragm type, it alleviates some of the shortcomings of the simpler unit. Since no detailed operating data on the Baum jig was available, Mr. Price confined his comparison to the H.M.S. and diaphragm jigging processes.

In his opinion, H.M.S. has a higher early investment than the latter, but with an increase in t.p.h., the initial cost of the jig increases at a faster rate than an H.M.S. plant. Labor cost was considered to be about the same. While the heavy-media units can stand wide variations in feed in a short time, this situation can disrupt the jigging process, the speaker said, unless close manual control is maintained. The latter process also requires, for most efficiency, a steady supply of

water, *i.e.*, the minimum of surges in pressure or volume. Jigs, however, have an advantage in being able to process a smaller size feed. As to operating costs, the speaker indicated an estimate of 15 to 20 cents per ton with H.M.S., and 5 to 10 cents with diaphragm-type jigs.

The recent installation of a hydraulic rising current classifier was noted by Mr. Price; but in the absence to test data, no detailed discussion was held.

With respect to the recent development of the elastic fractionation process, it was pointed out that the feed must be natural rounded gravels. Crushing would destroy the elastic properties on which the process depends. A description of early testing results and methods, and of the process in a new commercial installation was made. (See PIT AND QUARRY, April, 1957, p. 98, and October, 1957, p. 88.)

While comparison among the four systems are difficult, as Mr. Price pointed out, the industry is now in a position to make a choice, where none was available only 10 years ago.

Design for Grading and Control *A Sand and Gravel Plant Designed for Uniform Grading and Control* was described by Richard Campbell, vice-president and plant engineer, Harry T. Campbell Sons' Corp., Towson, Md.—a firm now completing a new plant designed on that basis.

For economic reasons and improved aggregates, the company was faced some time ago with the need for the modernization of the older plant or the construction of a new one. Several factors entered the picture, including: meeting U. S. Corps of Engineers and Navy Department specifications, as well as A.S.T.M. and local specs; increased production and above all, the need for a better control over gradation. A major problem in the older plant was a feed which had wide variation due to the characteristics of the three pits from which it was drawn.

A new plant was the answer to these problems, and the facility was designed to provide close control of gradation in either sand or gravel fractions. Sand will be split to three fractions in the new plant—coarse, medium, and fine. The first two will be obtained from Eagle Iron Works scalping tanks, and the third from Dorrclones, which will be fed the scalping tank overflow. More and sharper splits of gravel will be made in the new facility than in the old plant. Initially, five sizes in the 2½- down to ¼-in. range—those most in demand at present—will be made and stored in silos.

Finished products from these silos and from three sand stockpiles can be blended with a high degree of flexibility by means of a tunnel reclaiming belt. The entire blending and load-out system will be under the control of one man at a central control panel.

Another interesting design feature is that the plant is actually a dual facility. Each side will be able to produce half the estimated capacity, and, in the event of mechanical failure, the complete plant need not be shut down.

Gravel for Railroad Ballast Rockwell Smith, research engineer-roadway, American Association of Railroads, Chicago, Ill., presented a paper on gravel for railroad ballast which jolted any complacency the producers may have had in this area. Although, as he stated two years ago as well as now, gravel will fill all functional and quality requirement for railroad ballast, recent data shows that less than 2½ percent of the total annual sand and gravel production in this country was used for that purpose. At one time, the speaker noted, this category accounted for more than 25 percent of the total production. Further, 40 percent or more of the sand and gravel used as ballast, in Mr. Smith's figures, was produced by the railroads themselves.

From a recent survey of railroad gravel use, it was found that eastern carriers using the material often purchase from commercial operations. West of the Mississippi, with the possible exception of California, 90 percent or more of the gravel ballast produced comes from railroad-owned operations. Not only is this trend gathering momentum, but the eastern roads are also cutting their use of gravel appreciably. This decrease is partly due to increased track labor costs which has forced the railroads to adopt processes which will require the least number of repeat treatments on roadbeds. It has been estimated that acceptable gravel ballast life is from 50 to 70 percent that of fully crushed aggregates. Another strong factor, however, is the apparent lack of interest or aggressiveness on the part of sand and gravel producers. The railroads desire material that will reduce maintenance costs, the speaker stated; and if gravel can do this—which seems possible—it behooves the industry to start the ball rolling.

Sand and Gravel In Bituminous Mixes Whether or not the planned long-range program of road construction is completed in the 16 years now specified, certain factors, including available road building materials, will become substantially overburdened. This point was made by James C. Johnson, staff engineer of the Asphalt Institute, in a paper on *The Field for Sand and Gravel in Bituminous Mixtures.*

While the 41,000-mile Interstate System looms in the spotlight, there are more than 700,000 miles of primary, secondary, and farm-market road improvements to be considered as well. Since there are sections of the country where aggregate sources are now depleted, or rapidly becoming so, highway engineers are paying close attention to future needs for road materials.

Although sand and gravel are not universally available, Mr. Johnson stated, they are widely enough dispersed throughout the country to make their use both economical and advisable in many areas. Most states now permit the use of gravel in asphalt-paved highways—due, it was noted, to research and field testing which have developed better uses of the material in asphalt work.

While there are differences of engineering opinion on the degree required, if any, of crushed material in gravel-asphalt mixes, recent investigations have shown that most attention should be directed at the type and quality of fine aggregate used in the mixture.

Numerous tests of crushed, round material, and blends of the two—in asphalt mixes—have been made. Mr. Johnson showed a number of graph-slides illustrating results of those studies. In substance, a sharp gravel sand for fine aggregate will add quality to a mixture.

Because of relatively smooth surfaces, gravel does not readily absorb asphalt; and care is required in mixture design—particularly in asphalt content. However, due to the fact that asphalt-gravel mixtures do not normally have as much internal angularity as some other mixes, the same amount of rolling effort will result in a higher density for a well-graded asphalt-gravel mixture as for other mixes.

Mobile Radio Problems *Crowded Frequencies, Eligibility Restrictions, and Proposed Solutions* were discussed by Ernest W. Jennes, counsel for the associations. He stated that three major factors face producers today in the use of mobile radio. They are: ineligibility, limitations of use, and interference.

Ineligibility — Producers operating within metropolitan areas of 500,000 or more population are not permitted to use industrial radio under present regulations. This limitation is especially severe, since urban population is 40 percent of the U. S. total, and the bulk of construction work takes place in these larger cities. Aggregate producers are more severely limited, in having the use of radio restricted to yard areas only.

Limitations of Use — Dispatching and control of ready-mix or sand and gravel delivery trucks enroute to job sites remain the two functions permitted to radio control today. No sales use nor the control of activities unrelated to the specific standards is permitted.

Interference — With the rapid increase in the number of users of industrial radio in the last few years crowded conditions have resulted in a considerable amount of interference in most areas around urban centers. Today more than 1,200,000 transmitters are operating in 65 different services. There were 10,000 stations licensed to use the special Industrial Radio Service in 1956, ten times the number using such service seven years earlier. By June 30, 1957, this number had increased to 14,500 licensed stations operating over 140,000 individual transmitters.

One of the most important solutions to these problems, now under consideration by the FCC is the establishment of a Business Radio Service for the users of mobile radio units. This new service would eliminate both the Special and Low Power Industrial Radio Services as they now exist. Any person would be eligible for this new service, provided that he is engaged in any lawful business activity and proposes to use the facilities requested in connection with that activity. It would remove all existing restrictions on eligibility for, and use of, mobile radio, including the standard metropolitan area restrictions. Another solution considered is the use of split channels, making it possible, with improved equipment available, for stations to transmit on a narrower frequency space.

Industry Research Delmar L. Bloem, associate director of engineering of the two associations, presented his paper covering recent and current research activities of the associations' laboratory at the University of Maryland. Basically, this operates as a fact-finding agency for the engineering division. Conduct of flexural strength investigations, involving more than 2,000 tests, is the most ambitious project now in the laboratory. The overall cement study program, reported earlier by Mr. Walker, includes some 8,000 tests. The aggregate evaluation program, including specimens from over 100 sources, is still under way, as is the evaluation of slag cements. He described a series of tests on various admixtures, especially as to how these compare with calcium chloride inclusions. Studies of concrete proportioning are continuing, and some rather startling results have been accidentally experienced which dictate further investigations with larger beams and cylinders.

Future Testing Stanton Walker, director of engineering of the two associations, presented a thought-provoking talk entitled *Some Things We Need to Learn* (*i.e.*—on certain tests). He commented briefly on the fact that we do not know how to test sand, gravel, and concrete to reveal their significant characteristics with any degree of completeness. In testing aggregates, he said that there is no satisfactory test method to find the durability or deleterious character of aggregates. The abrasion tests *per se* is of no significance with respect to durability. An accelerated test is needed to establish aggregate performance, which would give the best correlation with the effects of freezing and thawing done by nature. The "quick chemical" and the petrographic examination leave much to be desired so far as quantitative accuracy is concerned.

The bituminous mixture field presents equally difficult problems with respect to aggregates. How to test for desirable characteristics presents a research problem which is of a highly practical nature. In fact, Mr. Walker feels that "applied research,"—investigation to determine *what* happens more particularly than *why* something happens—is of primary importance. He enumerated other less complex problems in testing which should be solved in a practical way, including these points: evaluation of mortar sands on the basis of performance; more work in the cement testing fields, especially with the portland blast-furnace slag cements, as to potentialities; aggregate beneficiation; ways to *remove* deleterious materials; determination of the proportions of concrete after it is mixed, while it is fresh, and after it has hardened; and determination of the effects of the numerous admixtures, in relation to the claims of their manufacturers.

Flexural Strength A paper entitled *Studies of Flexural Strength of Concrete* was presented by Richard D. Gaynor, who, with Mr. Bloem, co-authored the report. It represents a study made at the University of Maryland covering the effects of different aggregates and cements, air entrainment, variations in cement content, curing and moisture condition of specimens, and factors relating to the method of loading, and condition of

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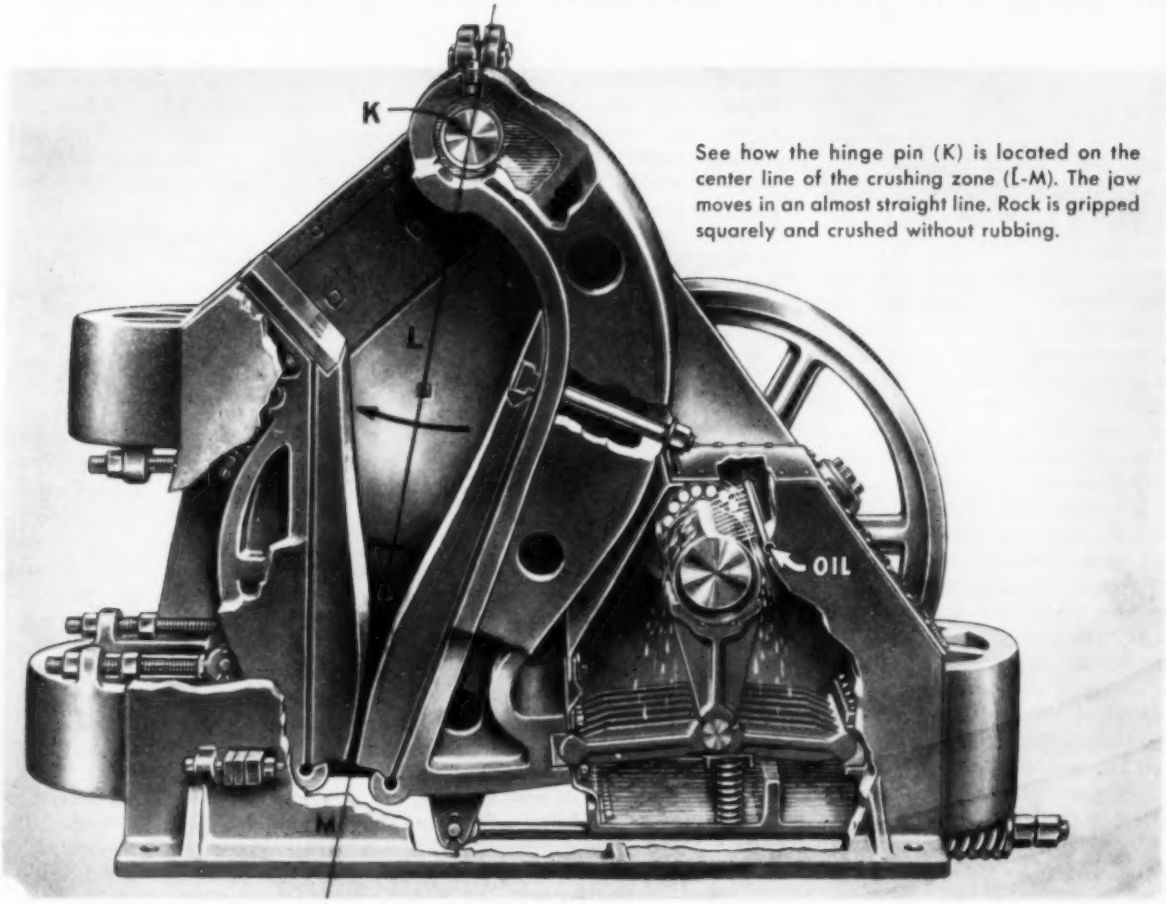
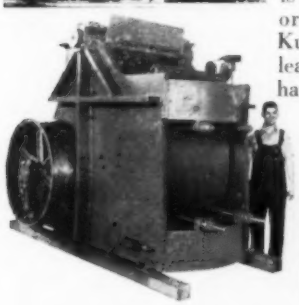


See how the hinge pin (K) is located on the center line of the crushing zone (L-M). The jaw moves in an almost straight line. Rock is gripped squarely and crushed without rubbing.

Rubbing, the main cause of jaw plate wear in ordinary crushers, is eliminated in Kue-Ken with its exclusive "crushing without rubbing" action. The jaw moves in almost a straight line gripping rock squarely and crushing. Replacement cost and downtime for changing jaw plates is only one fifth as much as ordinary crushers because Kue-Ken jaw plates last at least 5 times longer . . . the harder the rock, the longer the comparative jaw plate life and the greater the savings. Kue-Ken uses far less power because none is wasted wearing out jaw plates. The mechanism operates in a sealed, dust-tight crankcase lubricated by filtered oil to permit higher speed for greater capacity and a more uniform product. Wear is negligible and shut-downs common to conventional crushers are practically eliminated. Automatic flywheel release prevents breakage from tramp iron. Kue-Ken crushes the lowest cost per ton. There is a size to meet every need.



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the specimen. Most of the data collected has been previously presented in three papers before national gatherings, and this paper summarizes the important aspects of each. All papers have been printed and are available to members. Mr. Gaynor showed in a series of slides most of the essential graphs covering the above data. In the discussion which followed it was determined that these tests would continue, and would include other aggregates in addition to those first tested.

Fire Resistance The particular role that aggregates play in the fire resistance of concrete was discussed by J. P. Thompson, structural engineer, P.C.A., Chicago, Ill. He first defined the term to mean how well a material or construction will continue to perform its function when subjected to fire. The degree of fire resistance may vary greatly; and it was determined in the past mainly by experience and judgment, depending upon individual observations. There was no unanimity of opinion or just comparison before a standard testing procedure was established by the A.S.T.M. some years ago. This standard specification has done much to eliminate the inaccuracies common to personal judgment and provides a yardstick for measuring fire resistance and establishing classifications or ratings.

Mr. Thompson presented a preview of a film showing fire tests of reinforced concrete floors made by the Underwriters Laboratory for P.C.A. Both N.S.G.A. and N.R.M.C.A. assisted in the program of testing by furnishing the aggregates used. These included siliceous gravels, sandstone, limestone, igneous rock, clinker, slag, pan breeze, and crushed brick. The studies reveal that all natural stone and gravel aggregates can be used satisfactorily for fire-resistive concrete. In subsequent discussion of the paper and film Mr. Walker stated that the poorer results with siliceous aggregates would result in changes being made in model codes covering such aggregates as to their fire resistance. There are other tests under way at the P.C.A. laboratory covering fire resistance of prestressed concrete.

CONFERENCE ON OPERATIONS OF STATE AND AREA ASSOCIATIONS

Legislative Contacts In opening the conference on operation of state and area associations, Thomas E. Durkin, executive secretary of the Ready Mixed Concrete Association of Wisconsin, Inc., reviewed the pattern of legislative contacts which every industry association head must be ready and able to pursue for the maximum benefit of his group.

Noting the fact that state and/or local associations provide, in effect, protection for local producers who cannot face all problems alone, Mr. Durkin stated that the realization of the benefits of group membership on the part of the individual operator is the primary factor in the rapid growth of these associations.

In making the important legislative contacts, it was stated, association representatives must be prepared with concise facts and figures to support the specific issues in which the groups are interested. The legislative bodies to which these will commonly be presented, in the usual order of approach, are county boards—and it was emphasized that these should never be underestimated in terms of influence on the desired goal—city councils; state legislatures; and ultimately, in the interests of larger associations, the Federal Government.

Sales Promotion A thought-provoking question was raised by Paul Lenchuk, executive director of the Florida Concrete and Products Association, Inc., in a discussion of the *Promotion of Sales of Industry Products by State and Area Associations.* The query was: "Will there be a ready-mixed concrete industry in 1968, so that sales can be promoted?"

Such a speculation has a sound basis, Mr. Lenchuk pointed out, particularly in view of the fact that architects and engineers have actually sold more ready-mixed concrete than the industry itself—through the simple expedient of designing structures in concrete—and these professions are now beginning to entertain the thought that concrete may be obsolete in about 10 years.

Factual background for such an attitude is found in the new technologies and "wonder" materials—plastics, stressed skin sandwich panels, etc.—that are already realities. This fact, coupled with the greater expense for future available manpower, due, as the speaker noted, to the lower *per capita* birth rate of the depression years, will cause the construction industry to be faced with finding an alternative for materials that require costly erection labor.

While the expected reaction of ready-mix producers to such points is that concrete will nevertheless be essential for foundations, floors, etc., Mr. Lenchuk pointed out that the new building materials will enable builders to put up extremely light structures—*ergo,* no need for heavy foundations.

Two steps, Mr. Lenchuk said, could be undertaken immediately. First, an effective and professional promotion and advertising campaign and service which will be devoted to exploiting the use of ready-mixed concrete wherever and however applicable. Second, the development of a new products service which will chart out new uses for concrete, new methods, and above all, new concrete to meet new needs. A very important factor in this program would be the development of pre-engineered, pretested materials which would leave architects free for designing; this the coming competitive materials are doing.

Freight Rates J. D. Lewis, president of American Sand & Gravel Co., Hattiesburg, Miss., discussed the history of a four-year contest between a group of Mississippi sand and gravel producers and the state public service commission on one side and rail carriers, along with the ICC, on the other. At issue was another change in a long series of changes in intrastate freight rates.

Mr. Lewis pointed out that in general there are three principal rail plant producing areas in the state, and at one time these areas, plus a Mississippi River operation, provided the bulk of washed sand and gravel used in the state. The rail plant type of operation is preferred, it was said, but developments in recent years in improved, small port-

able plants, improved automatic equipment, and steadily increasing freight rates have created a trend contrary to the above preference. The latter rates, in particular, have contributed to the opening of a number of smaller scattered deposits which are not suitable for rail plant production but are quite amenable for operation by portable units, with delivery made by truck.

As rail freights have advanced, the trend to truck transport has grown, it was noted. Support for that trend, Mr. Lewis said, is found in the history of rate making in the state—recurring cycles of increase followed by reductions. As a result of this peak and valley procedure, producers have lost more customers on each upswing that cannot be recovered during subsequent reversals. This occurs because of the establishment of "wayside" plants, and because the customer, when forced by high rail rates to move his material by truck, finds that the latter is more convenient for his purpose.

The issue contested by the Mississippi producers originated with the filing by the carriers in 1951 for a general increase under Ex Parte 175. Subsequent developments included the petition by rail carriers in Mississippi for application of those (nationwide) rates to intrastate traffic. These were allowed by the state commission with certain exceptions, including sand and gravel. A petition from state carriers for examination by the ICC was made.

The producers countered with a strong case with several premises, including these: the ICC has no power to alter intrastate rates unless justification clearly appears from the evidence; mere disparity between intrastate and interstate rates is not sufficient to justify exercise of federal power; and competition is an important factor to be considered in determining reasonable rates. On the part of the carriers, a case was built on the premise that Mississippi intrastate rates caused revenue discrimination against interstate commerce, and that the former traffic did not bear its proportionate share of carrier revenue requirements.

When the ICC ruled that evidence presented substantiated the carriers' claims on that basis, the producers—and the state public service commission—initiated an action in Federal District Court against the United States of America and the ICC. (Mississippi rail carriers became intervening defendents.)

The District Court opinion, rendered in September, 1954, judged in favor of the producer on the basis of insufficient evidence of discrimination against interstate traffic. An appeal was filed with the U. S. Supreme Court by the ICC and the carriers, and a motion for affirmation (of the District Court decision) was filed with the same tribunal by the producers. The latter motion was granted—which in effect upheld the District Court decision.

Aggregate Deposit Protection The problems faced by Denver area producers in *Maintaining the Availability of Aggregate Deposits for Commercial Use* were described by C. G. Cooley, president, Cooley Gravel Co., Denver, Colo. Two unusual factors entering the picture in that location are (1) that much of the material is found within or near the city limits, and (2) that four counties with the same number of individual planning commissions are involved.

Much of the original available deposits have already been lost through building in these areas before the material was removed. By 1956, local operators were soberly facing the realization that remaining reserves might soon be eliminated through zoning and building.

Several Denver area producers formed an association in that year for the purpose of studying all facets of the problem and taking rectifying measures. Significantly, the group found the general public ignorant of the contributions, problems, and importance of the industry to the community, but encountered more awareness of these points on the part of public officials. The latter, however, were under pressure from constituents.

The policy ultimately outlined by the operators included concentration on acquainting the public with the facts, obtaining uniform zoning applications in all counties, and directing efforts toward conservation of reserves by setting them aside through local legislation.

As part of a public relations program, trucks were fitted with signs carrying the slogan "Gravel Builds"; a data sheet presenting "63 Facts" on the importance of the industry was distributed; and a map brochure was issued, pinpointing important factors relating to deposits, the distribution of the sand and gravel dollar in the community, and impressive construction utilizing the materials.

Favorable results of the program are already in evidence. In one instance, a county has adopted new regulations under which an operator no longer has to have 100 percent approval of the neighborhood in order to carry on operations. Five-year permits are being issued, with the expectation of no difficulty in renewal.

In closing, Mr. Cooley stated that the most important factor in the entire program is that of acquainting John Q. Public, with the industry's significance. It was noted that the Los Angeles strike was quite educational to the public there on that point. Other procedures followed by the Denver area group include scheduling of open houses for public relations, plus a planned restoration and reclamation policy.

Area Safety Programs *Delineating A Successful and Productive Safety Program Within the Membership of an Area Association,* H. G. Feraud, executive secretary of the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association described the development of such a program by these two groups.

When the associations' directors, in 1954, decided to inaugurate a program, they also decided to confine it, at least temporarily, to a lost-time injury frequency basis. This was largely due to the anticipated difficulty in educating personnel of member firms to keep correct severity records. A six-member safety committee initiated the program with a retrospective survey of the preceding year—in which they found a frequency rate of 31.89.

A system of monthly reports from the members was set up from which analyses of all lost-time injuries were made. Descriptions of

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all injuries are tabulated, including age and classification of the employee, length of service, time of injury occurrence, shift hours preceding occurrence, and day of the week—these points all being considered significant facts.

It has been found from these analyses that 75 percent of the injuries occur in the transportation department—either in rock, sand, or gravel truck traffic, or mixing and transport of ready-mix trucks. Most were due to faulty footing; and as a consequence, representatives of truck manufacturers sit with the safety committee at meetings to learn possible corrective measures.

Each month an association publication—the *Safety Sentinel*—carries a description of each member's experience during the preceding month and a detailing of each lost-time injury. It has been found that employees are greatly interested in these efforts, and also in the accompanying posters; and, significantly, no employee has been subject to more than one lost-time accident since the program's inception.

The program has been effective. In the first year the frequency rate dropped to 22.68. By the end of 1957, Mr. Feraud pointed out, the rate had dropped to 16.52—or a reduction of 48.51 percent in the 3½ years the program has been in operation. With the annual number of lost-time injuries down from 212 (1954) to 120 (1957), at an average direct and indirect cost of $553.95 per injury, it is estimated that the safety program has already resulted in a savings of nearly $51,000.

The Des Moines (Iowa) plant of the Marquette Cement Manufacturing Company has been awarded the Portland Cement Association's safety trophy for its record of having no lost-time accidents during 1957. It was the eighth time the plant has received the award, and its third successive year with no accidents.

Fire destroyed an elevator, a crusher room, and a storage building, causing damage estimated at $200,000 at the Stewart Sand and Material Company's quarry near Independence, Mo.

1957 Sales, Net Profits Of Nonmetals Concerns Show Uneven Picture

Gladding, McBean and Company, Los Angeles, Calif., achieved the highest net sales and earnings in its 82-year history during 1957. According to unaudited figures, net sales for the year ended December 31 totaled $35,155,500 or 5 percent greater than the $33,524,000 reported for the previous record year of 1956. Earnings amounted to $3,422,000 or $2.16 a share compared with $3,353,000 or $2.12 in 1956.

General Refractories Company, Philadelphia, Pa., reported net earnings of $7,759,000 or $5.58 a share for 1957, compared with $7,200,000 or $5.19 in 1956. Sales were $67,600,000 against $67,225,000 in 1956.

For the year ended December 31, 1957, Basic Incorporated, Cleveland, Ohio, reported a total income of $23,824,117 and a net income of $1,397,572, the latter amounting to $1.72 per common share outstanding. In the previous year, Basic's total income was $24,337,103, and net income totaled $1,721,274 or $2.12 per share.

Harbison-Walker Refractories Company, Pittsburgh, Pa., had a net income of $13,372,030, or $4.40 a share for the year ended December 31, 1957. This compares with $11,047,111, or $3.62 a share in 1956. Sales in 1957 amounted to $104,008,702; in 1956 the figure was $94,672,360.

Pacific Cement and Aggregates, Inc., San Francisco, Calif., reported sales of $24,970,087 and net income of $1,246,018, or $1.03 per share of common stock, for the 1957 calendar year. This compares with the 1956 figures of $26,573,858 for sales, $1,531,438 for income, or $1.27 per share.

Halliburton Oil Well Cementing Company reported a net income of $19,168,313, or $4.80 per share for the year ended December 31, 1957, compared with $19,965,136, or $5 per share in 1956.

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These are some of the reasons why H. Gibson Stewart prefers the

CATERPILLAR NO. 955 TRAXCAVATOR*

H. Gibson (Gib) Stewart, Stanhope, N. J., contractor, has nothing but praise for the No. 955 Traxcavator he bought last year. His assistant, David J. Smith, sums up how they feel about it this way:

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Shown above, the Traxcavator is loading a truck on a hydraulic dredge operation at the Sequine & Bogart Sand and Gravel Pit, Succasunna, N. J. The contract is for the removal and disposal of approximately 4 ft. of hardpan and topsoil from sand. With this CAT* No. 955 Traxcavator under him, the operator has loaded as many as 100 trucks in one day.

Glowing reports of more lift, faster lift and more production per pound of machine continue to come in from owners of these rugged, hard-working excavator-loaders. The complete Traxcavator line consists of the No. 933, 50 HP, 1 cu. yd. bucket; the No. 955, 70 HP, 1½ cu. yd.; and the No. 977, 100 HP, 2¼ cu. yd. A wide variety of buckets and attachments are available for these unit-built machines.

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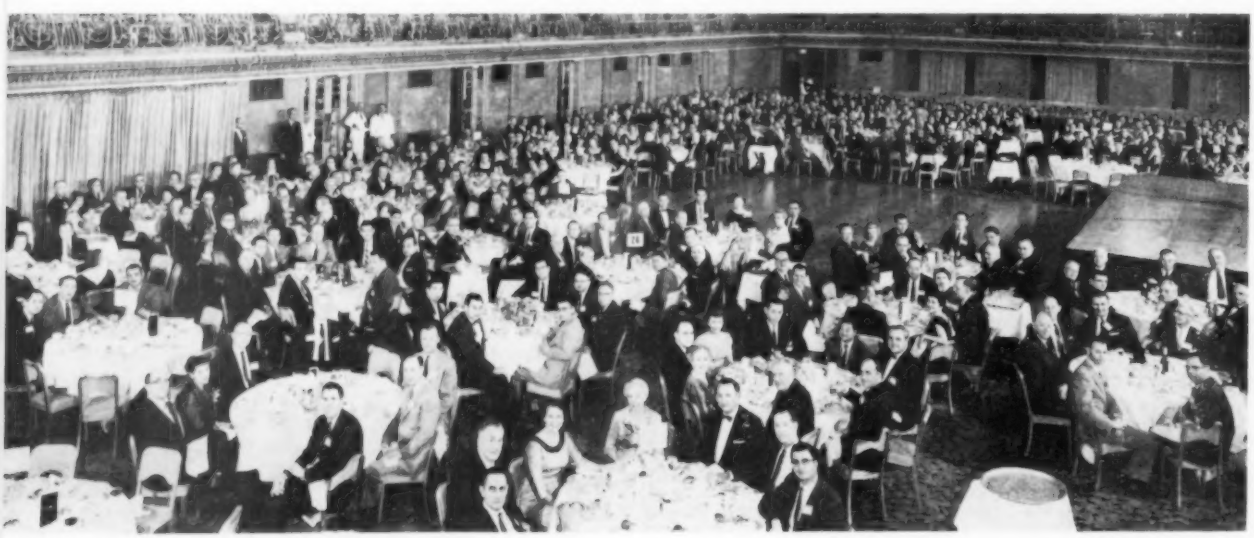
41st N.C.S.A. Convention

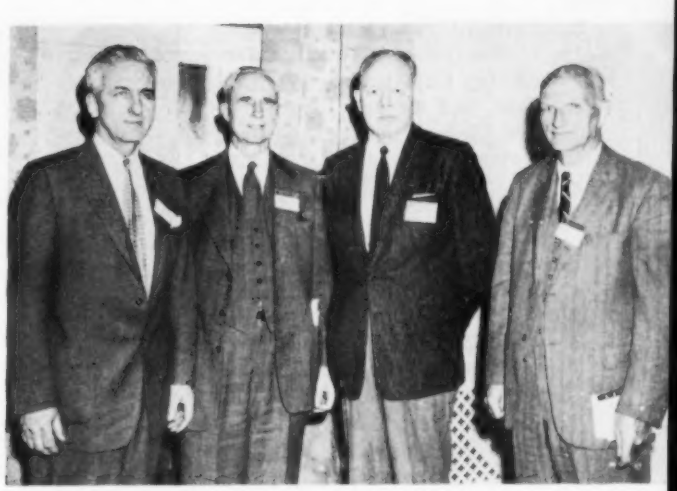
Draws Record

THE 41st annual convention and biennial exposition of the National Crushed Stone Association recently passed into history after breaking every existing record for attendance, number of exhibits, and membership in both the association and its Manufacturers Division. Held on February 17, 18, and 19, 1958, at the Conrad Hilton Hotel, Chicago, Ill., the meeting also measured up to previous standards from the standpoint of the importance of subjects discussed on the program and their variety. The official registration was 1986, as compared to 1751 in 1956, the last previous exhibit year. The total of 89 exhibitors broke the 1956 record of 67.

Preceding the official opening of the convention and exposition were meetings of the Manufacturers Division board of directors and the N.C.S.A. board of directors on Sunday, February 16. Convention sessions were held during the morn-



The annual N.C.S.A. dinner dance, held in the Grand Ballroom of the Conrad Hilton hotel.



Present and past N.C.S.A. officers, including (l. to r.): W. C. Rowe (Rowe Contracting Co.), vice-president; N. E. Kelb (Cumberland Quarries), retiring president; O. E. Benson (General Crushed Stone Co.), new president of the association; and J. R. Callanan (Callanan Road Improvement Co.), treasurer.

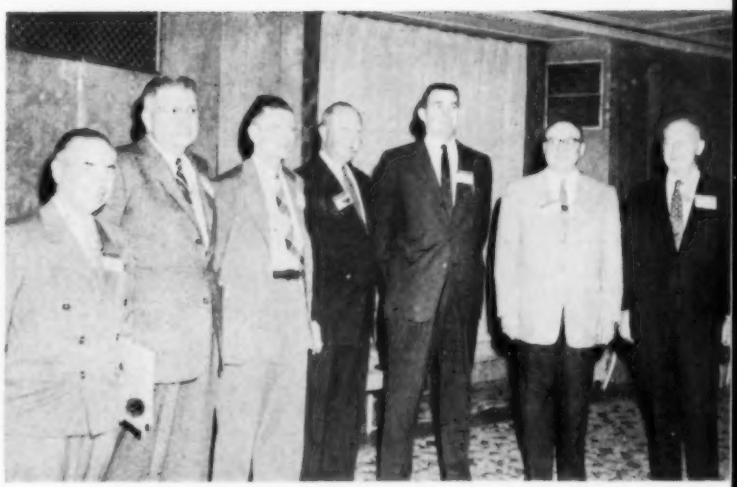
Attendance

ing of Monday, February 17, all day Tuesday (with two simultaneous meetings in the morning), and on Wednesday afternoon. The exposition was open all day Monday and Tuesday and on Wednesday until noon. There were no sessions on Monday afternoon or Wednesday morning, in order to give everyone full opportunity to see the exhibits.

Presiding officers for the convention sessions were as follows: Norman E. Kelb (Cumberland Quarries, Inc.) N.C.S.A. president; A. W. Heitman (Inland Lime & Stone Co.); W. S. Weston Jr. (Weston & Brooker Co.); and R. S. Reigeluth (New Haven Trap Rock Co.).

members commend equipment show, excellent program

Election of Officers The new president of the National Crushed Stone Association is Oscar E. Benson (General Crushed Stone Co.). He succeeds Norman



Among the operating session panel and speakers were: T. C. Cooke (Lynn Sand and Stone Co.); L. J. Burriss (Weston & Brooker Co.); M. J. Kilpatrick, Bureau of Public Roads; E. J. Reichart (Harry T. Campbell Sons' Corp.); Montagu Hankin Jr. (Houdaille Construction Materials, Inc.); W. H. Ruby (Acme Limestone Co.); and R. T. Lassiter (Western-Knapp Engineering Co.).

E. Kelb (Cumberland Quarries, Inc.). Warren C. Rowe (Rowe Contracting Co.) is the new vice-president, and the new treasurer is J. Reid Callanan (Callanan Road Improvement Co.). J. R. Boyd, executive director of N.C.S.A., was elected secretary.

Succeeding Mr. Rowe as regional vice-president of the Southeastern Region is A. N. Foley (West Roxbury Crushed Stone Co.). Other new vice-presidents are: A. W. Heitman (Inland Lime & Stone Co.), Northern Region; and K. K. Kinsey (Concrete Materials & Construction Co.), Midwestern Region. New executive committee members include Horace C. Krause (Columbia Quarry Co.); Charles Coburn (Waukesha Lime & Stone Co.); George D. Lott Jr. (Palmetto Quarries Co.); and Don L. Williams (Virginian Limestone Corp.).

Re-elected honorary members of the board of directors are H. E. Rodes, O. M. Stull, Sterling Tomkins, and Harold Williams. Chosen for this honor for the first time were W. N. Carter and S. P. Moore.

Two new top officers of the Manufacturers Division are L. A. Eiben (Northern Blower Co.), chairman; and Richard D. Ketner (General Electric Co.), vice-chairman.

Coming Conventions The 1959 N.C.S.A. convention will be held at the Americana Hotel, Miami Beach, the week of January 25. This was the site of the very successful 1957 convention. Facilities have been expanded with a new auditorium having a capacity of 2,500, and 125 additional rooms. The 1960 convention and exposition are tentatively scheduled for Chicago in February. The 1961 convention will be at the Commodore Hotel, New York City, during the week of February 12. The 1962 convention and exposition are tentatively scheduled for Chicago in February.

The 1958 mid-year directors meeting will be held July 24-25 at The Homestead, Hot Springs, Va. In 1959 it is scheduled for Pebble Beach, Calif.

Safety Awards A highlight of the greeting luncheon on the first day of the convention was the presentation of the N.C.S.A. safety awards. H. H. Kirwin, Eastern Rock Products, chairman of the association's accident prevention committee made the presentations.

For the third consecutive year, top honors, and the bronze plaque contributed by *Explosives Engineer Magazine*, were won by the Warner Company's Bellefonte division Bell Mine, which operated a total of 277,540 man-hours without a lost-time accident.

Honorable mention and N.C.S.A. certificates were distributed to the other 31 winners of the contest. This competition has been conducted since 1926 under the auspices of the U. S. Bureau of Mines.

The 1956 winners—listed on the poster shown in an accompanying photograph—represent a gain of two over the preceding year. However, as pointed out by Mr. Kirwin in his accident committee report, there is room for improvement in the number of member companies participating in the contest.

While the 1957 record was a good one—there was only one fatality, caused by a truck accident—there were only 43 companies participating in the contest, as compared with 51 in the preceding year. These represent 86 plants, of which

Representatives of the N.C.S.A. 1956 safety contest winners. Bottom row (left to right): Gene Andres, No. 8 Quarry, Columbia Quarry Co.; E. A. Heise, Krause No. 1 Quarry, Columbia Quarry Co.; Stirling Tomkins, New York Trap Rock Corp., Tomkins Cove Quarry; H. H. Kirwin, Eastern Rock Products, Inc., N.C.S.A. Accident Prevention Committee; J. O. Sherod, Bell Mine, Cedar Hollow, and Union Furnace Quarries, Lime Div., Warner Co.; A. W. Heisler, Stafford Quarry, Genesee Stone Products Corp.; Emil Berry, Avoca Quarry, Jefferson County Stone Co., Inc.; A. W. Zimmer Jr., Cape Girardeau Mine, Federal Materials Co., Inc.

Middle row (left to right): O. C. Dietschler, Jordanville Quarry, General Crushed Stone Co.; G. B. Phillips, Kimballton and Bakerton Mines, Standard Lime & Cement Co.; R. L. Walker, Cheektowaga Quarry, Federal Crushed Stone Corp.; O. E. Benson, Oaks Corners Quarry, General Crushed Stone Co.; Robert Santmier, Eastern Rock Products, Inc., Prospect Stone Plant No. 6; W. L. Stanley, Bessemer Quarry, Bessemer Limestone & Cement Co.; Hiram Towne, Oriskany Falls Stone Plant No. 5 Quarry, Eastern Rock Products, Inc.

Top row (left to right): W. D. Milne, Webster Quarry, Kentucky Stone Co.; Luther Fourman, Plant No. 1, Callanan Road Improvement Co.; W. J. Wise, Plant No. 4, Southwest Stone Co.; John Cox, Watertown Quarry, General Crushed Stone Co.; H. P. Jones, Auburn Quarry, General Crushed Stone Co.; E. L. Childs, Pixley Mine, Stewart Sand & Material Co.; Henry Patrick, Plant No. 2, Catskill Mountain Stone Corp.; and Ray Vencill, Tyrone Mine, Kentucky Stone Co.

The Tractors That Industry Drafted...

The NEW JOHN DEERE "440's"

The highly mobile new "440" Wheel Tractor is ideal for construction and maintenance work of all types.

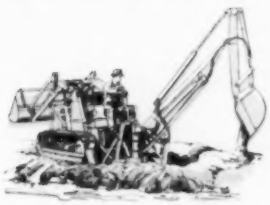
Ruggedness, power, operator's comfort, and all-around economy are featured in the new "440" Crawler.

A new, complete line of John Deere quality-built working equipment matches the "440's" to the construction job.

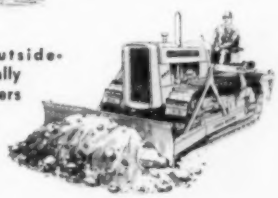
THE new John Deere Crawler and Wheel Tractors are just what industry ordered—big-capacity power at low cost—low in initial cost and in operating cost.

Both John Deere Tractors are ruggedly built from grille to drawbar . . . designed, inside and out, to fill definite needs in industrial work of all types . . . to cut costs to rock bottom on every job you assign them. Both tractors are built around the amazingly efficient John Deere engine, unmatched for delivering so much for so long for so little. Both are ruggedly constructed and boast many features, including optional clutch-type direction reverser, that enable them to do more than their share of the day's work. Power steering on wheel type is available if desired.

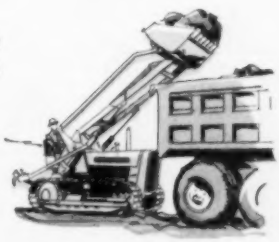
Let your John Deere industrial dealer fill you in on the many qualities of design and construction that make these tractors so suitable for the rough, tough everyday jobs of modern industry.



Deep-digging, highly efficient backhoes . . . power-operated trenching units . . . and fast working scrapers are available for both crawler and wheel models.



Inside- and outside-mounted, hydraulically controlled bulldozers team up with the high-torque John Deere Crawler to handle a wide variety of work.



Heavy-duty front-end loaders with rear-end scarifiers make fast work of earth moving. Exclusive clutch-type direction reverser saves time, effort on many jobs.

Your John Deere industrial dealer can tell you of the many other types of equipment available for use with John Deere Industrial Tractors.

JOHN DEERE Industrial Tractors and Equipment

Completely Engineered for Industry

For Further Information Write: **JOHN DEERE INDUSTRIAL DIVISION • MOLINE, ILLINOIS**

The poster displaying the names and records of the N.C.S.A. 1956 safety contest.

29 had accident-free records. An editorial program for stimulation of interest in safety activities is in the planning stage.

Manufacturers Division The new chairman of the Manufacturers Division of N.C.S.A. is Lawrence E. Eiben (Northern Blower Co.), succeeding Wayne W. King (W. S. Tyler Co.). Richard D. Ketner (General Electric Co.) is the new vice-chairman, and J. R. Boyd (N.C.S.A.) is secretary. Irwin F. Deister (Deister Machine Co.) is a new member of the executive committee, as is Oscar E. Benson, the new president of N.C.S.A., and Wayne W. King, as retiring chairman. Other members of the committee are W. E. Collins Jr. (Atlas Powder Co.); R. D. Ketner; and J. M. Hume (Pettibone Mulliken Corp.). Messrs. Eiben, Ketner, and King will represent the division on the N.C.S.A. board.

The membership of the division, according to Chairman R. D. Ketner, increased during the year from 114 to the old limit of 125.

During the annual luncheon and business meeting of the Manufacturers Division, N. E. Kelb, retiring N.C.S.A. president, and O. E. Benson, president-elect of the latter group, expressed congratulations to the manufacturers for the excellent equipment exposition, and appreciation for the co-operation of their members.

After the luncheon, J. R. Boyd, executive director of N.C.S.A., and secretary of the Manufacturers Division, commented on the exposition, by-laws revisions, and next year's convention. He pointed out that the 1958 equipment show was the largest ever held in conjunction with the annual N.C.S.A. meeting.

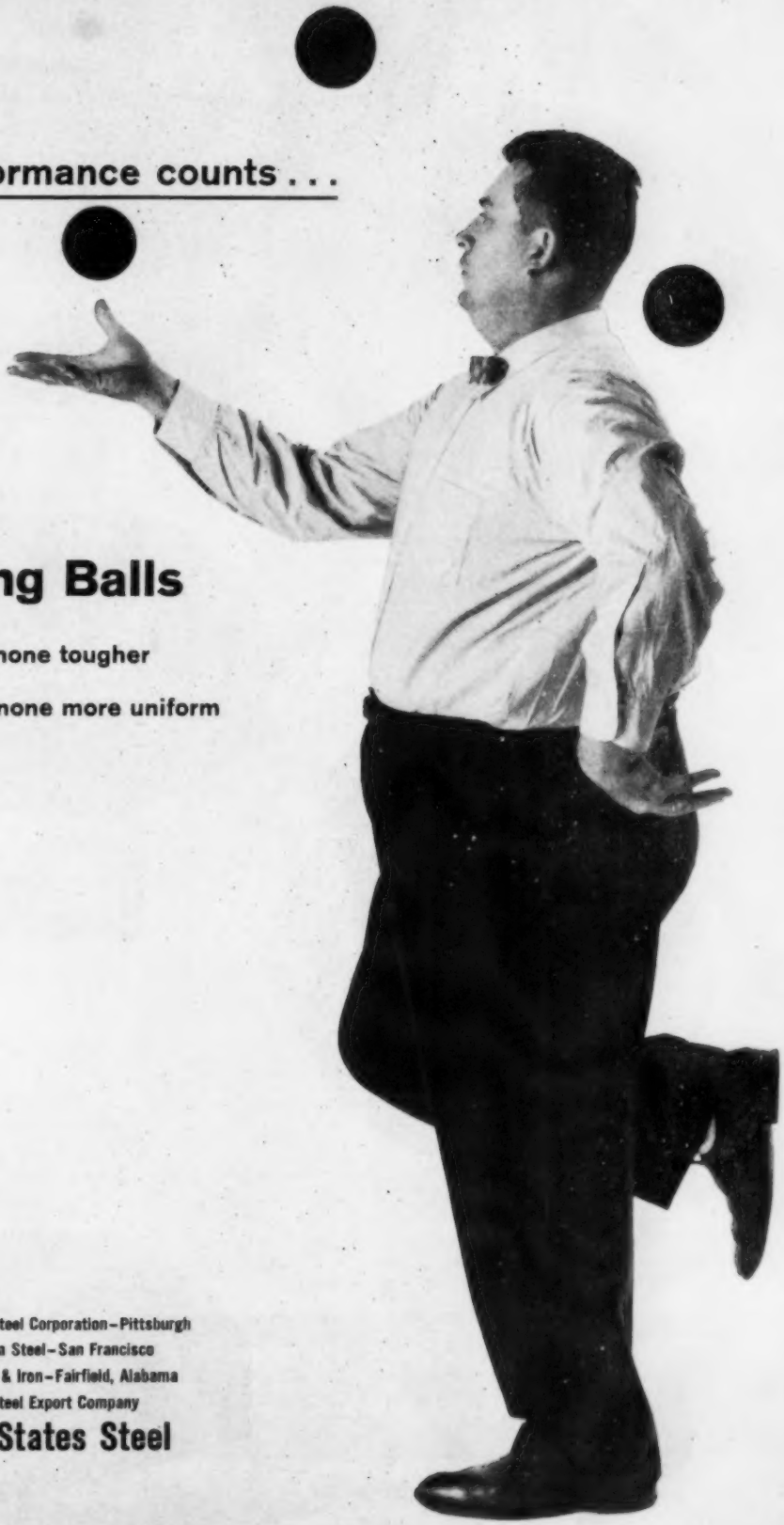
President's Address Norman E. Kelb, (Cumberland Quarries, Inc.), president of N.C.S.A., in his opening address,

(*Continued on page* 105)

Joe Sherod, Warner Co., with the Explosives Engineer Magazine award for top honors in the N.C.S.A. safety contest, won by the Bell Mine, Bellefonte Division of Warner Co.

Harold Allen, Bureau of Public Roads, who spoke on aggregates for Federal Aid roads; and Joe Gray, N.C.S.A. director of engineering.

Whenever performance counts . . .



USS Grinding Balls

forged steel—none tougher

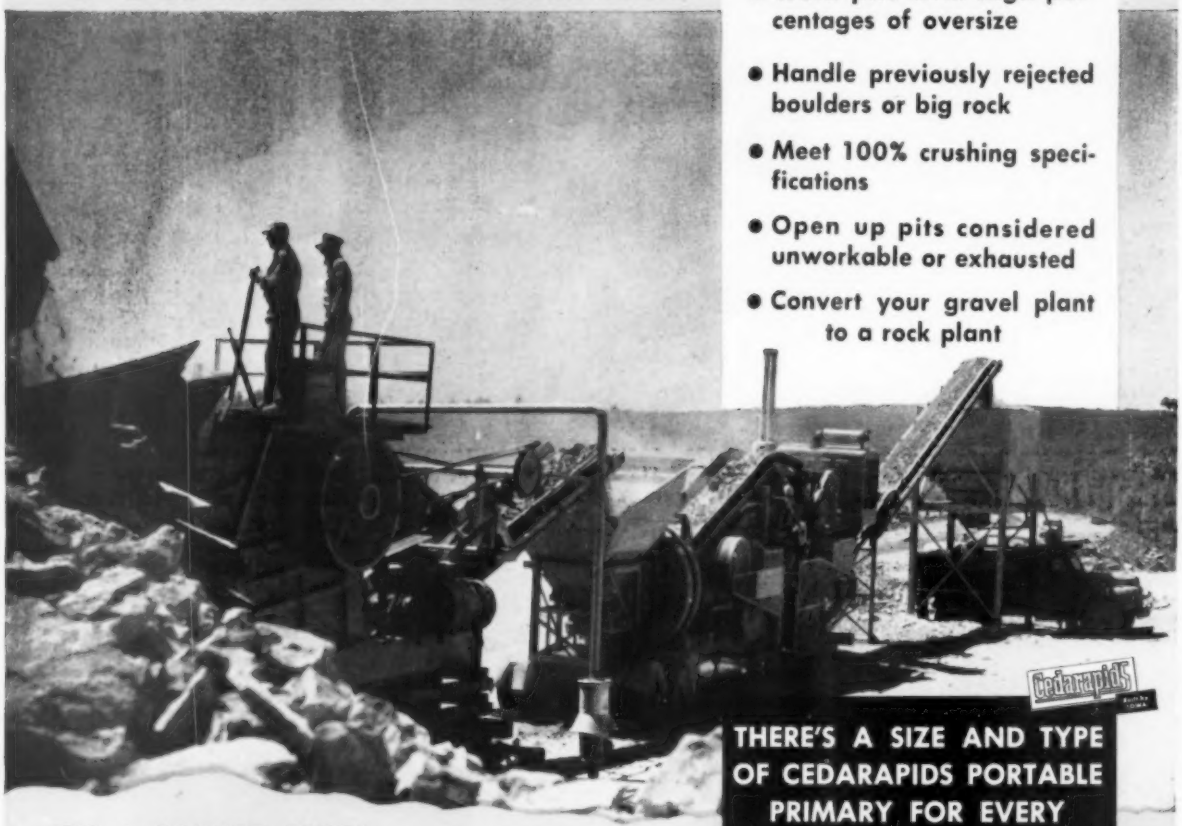
none harder—none more uniform

USS TRADEMARK

United States Steel Corporation–Pittsburgh
Columbia-Geneva Steel–San Francisco
Tennessee Coal & Iron–Fairfield, Alabama
United States Steel Export Company

United States Steel

Double your secondary crushing capacity with a CEDARAPIDS PORTABLE PRIMARY



...and get all these other advantages!

- Work pits with high percentages of oversize
- Handle previously rejected boulders or big rock
- Meet 100% crushing specifications
- Open up pits considered unworkable or exhausted
- Convert your gravel plant to a rock plant

IT'S A PROVED FACT!

With a Cedarapids Portable Primary *of the size and type to fit your conditions* to handle the heavy crushing load ahead of your secondary equipment, you can double your plant capacity!

It adds a third stage of reduction to your operation, permitting your secondary crushers to handle twice as much material. It reduces the circulating load. More material will be taken off by the screen in your secondary plant before it reaches the crusher.

Equipped with a vibrating grizzly or scalping screen, your Portable Primary by-passes fines, sand, chips or dirt to prevent choking of the crushers.

You can turn *all* pit-run material, even big boulders, into specification 100% crushed aggregate. You'll have the capacity and flexibility to handle a wider variety of jobs . . . open up deposits considered unworkable because of excessive oversize or fines, re-open pits thought to be exhausted, operate in pits or quarries closer to the job to save hauling costs.

THERE'S A SIZE AND TYPE OF CEDARAPIDS PORTABLE PRIMARY FOR EVERY PRIMARY REDUCTION JOB

Single Jaw Crusher

15" x 24" 25" x 40"
22" x 36" 30" x 40"

Twin Jaw Crusher

18" x 36"

with low-cost Vibrating Grizzly

Increases output of primary crusher up to 25% by by-passing fines before they reach the crusher. Three sizes available with single or double deck.

with Scalping Screen

48" x 6' horizontal vibrating screen between feeder and crusher increases production in pits with low percent of crushing, or where specifications require 100% crushed particles.

Portable Double Impeller Impact Breakers

30" x 42" 36" x 45"

With a reduction ratio of 20 or 30 to 1, this unit assures high capacity of desirable cubical shaped aggregate, which needs little or no further reduction.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

POWER-LIFT PORTABLE CONVEYORS for use with portable crushing plants are described in a folder published by the *Universal Engineering Corporation.* These conveyors operate at 5 to 15 hp. to move material 300 f.p.m. or more at an angle of 18 to 20 deg. **(301)**

THE NAPCO "CRAB" TRACTOR, a four-wheel-drive, four-wheel-steer unit, is featured in a brochure issued by *Napco Industries, Inc.* Included are complete specifications and a description of attachments. **(302)**

CHEM-JET DUST CONTROL SYSTEMS for rock crushing plants are described in a booklet available from *Johnson-March.* Installation photos depict the points at which control systems are most effective. **(303)**

VIBRATING SCREENS manufactured by *Simplicity Engineering Company* are covered in Catalog No. 571. Featured are the grizzly feeder, Os-A-Veyor feeders, aggregate screens, plus interesting crushed stone and mining installations. **(304)**

A WELDING TORCH CHART offered by the *Harris Calorific Company* illustrates the appropriate welding and cutting tips and attachments to be used on its new No. 43 torch. **(305)**

A CEMENT PLASTOGRAPH for the continuous control of cement slurry consistency is detailed on a data sheet released by the manufacturer, *C. W. Brabender Instruments, Inc.* **(306)**

DIESEL ENGINE MODELS D-344 AND D-516, manufactured by the *Allis-Chalmers Manufacturing Company,* are described in Catalog BU-413. Photos, cutaways, and charts explain the operating advantages of the two engines. **(307)**

A CONVEYOR BELTING CATALOG offered by the *Quaker Rubber Div., Quaker Pioneer Rubber Div., H. K. Porter Company, Inc.,* contains illustrations of the company's line of belting, and gives specifications, recommeded applications, and sizes. **(308)**

WORK BULL TRACTORS AND DAVIS ATTACHMENTS are illustrated in a catalog issued by the *Massey-Ferguson Industrial Division.* Features and specifications are included for each piece of equipment. **(309)**

MODEL 50 KEYSTONE-FRANKS ROTARY DRILL RIG is described in an illustrated bulletin issued by the *Stardrill-Keystone Company.* Capacity, dimensions and weight, and standard recommended operating equipment are given. **(310)**

THE HI-G VIBRATING SCREEN, developed by *Hewitt-Robins, Inc.,* is the topic of Bulletin No. 160. Design of the screen incorporates a modified resonant spring system which enables the screen to supply most of its own energy and allows the use of smaller drives and motors. **(311)**

CRUSHERS AND PULVERIZERS manufactured by the *Stedman Foundry and Machine Company, Inc.,* are covered in Catalog No. 517. Cross-sections and tables of capacities and dimensions are given for single and multiple cage mills. **(312)**

FIRST CLASS
PERMIT NO. 44
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Pit and Quarry Publications

431 South Dearborn Street
CHICAGO 5, ILL., U.S.A.

April ***PIT AND QUARRY*** **1958**

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

_____ _____ _____ _____ _____ _____

_____ _____ _____ _____ _____ _____

Name _____ Title _____

Company _____

Address _____

City _____ Zone _____ State _____

We Produce _____

Remarks: _____

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

A HARDSURFACING CATALOG issued by *The McKay Company* details Hardalloy electrodes and Tube-Alloy wires, listing over 500 places hardsurfacing can be used advantageously and indicating the electrode or wire used for buildups and overlays. **(313)**

BAILEY METERING AND CONTROL SYSTEMS are covered in a 4-page bulletin released by the *Bailey Meter Company*. A discussion of pneumatic and electric telemetering and pneumatic control is included. **(314)**

WET CLASSIFICATION is discussed in a revised catalog available from the *Hardinge Company*. Construction and application information is included for classifiers, hydro-separators, washers, and heavy media separators. **(315)**

A NEW WAGON DRILL FLIER, published by *Ingersoll-Rand*, describes the company's three models of wagon drills—the FM-4 wagon drill, the FM-4 rotary, and the lightweight JHM "Wagonjack" mounting. **(316)**

MODEL 404 TROJAN TRACTOR SHOVEL, rated at 4 cu. yd., is described in a colorful brochure released by *The Yale & Towne Manufacturing Company*. Complete specifications and a list of standard equipment are included. **(317)**

"CONVEYORS OFF-THE-SHELF" is the title of a newly-released folder illustrating some of the standardized conveyor components manufactured by the *Barber-Greene Company*. **(318)**

SYMONS CRUSHERS AND SCREENS are shown in block-out photographs and principal features of each are included in Bulletin 271, which displays the complete product line of the *Nordberg Manufacturing Company*. **(319)**

ELECTRIC PLANTS manufactured by the *Kohler Company* are described and illustrated in a bulletin which includes capacities and dimensions of the air-cooled and liquid-cooled models. **(320)**

TYPE BA SLURRY PUMP is covered in Bulletin No. 188 issued by the *Morris Machine Works*. Capacities and applications of the new medium-range, high-speed slurry pump are described. **(321)**

HYGRADE WORM GEAR SPEED REDUCERS are featured in Bulletin HG-3, prepared by the *Foote Bros. Gear and Machine Corporation*. Features are described, and diagrams show typical dimensions of the four new Hygrade speed reducers. **(322)**

ATHEY 7-11 FORCE-FEED LOADER is pictured in its various applications in a booklet issued by the *Athey Products Corporation*. Also described is the Athey 125 HiLoader, a belt loader with swiveling conveyor. **(323)**

CONDOR LS V-BELT for long center, heavy-duty drives is detailed in Bulletin M210, issued by the *Manhattan Rubber Division, Raybestos-Manhattan, Inc.* **(324)**

A CATALOG OF CONVEYOR BELTING manufactured by the *Hamilton Rubber Manufacturing Corporation* provides product and technical information. It also serves as a working record by providing check lists for the inspection of present belts. **(325)**

April ***PIT AND QUARRY*** **1958**

Insert key numbers found below items on advertising, literature, and new equipment pages. Print company name if not keyed.

_____ _____ _____ _____ _____ _____

_____ _____ _____ _____ _____ _____

Name_____ Title_____

Company_____

Address_____

City_____ Zone_____ State_____

We Produce_____

Remarks:_____

FIRST CLASS
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BUSINESS REPLY CARD
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431 South Dearborn Street

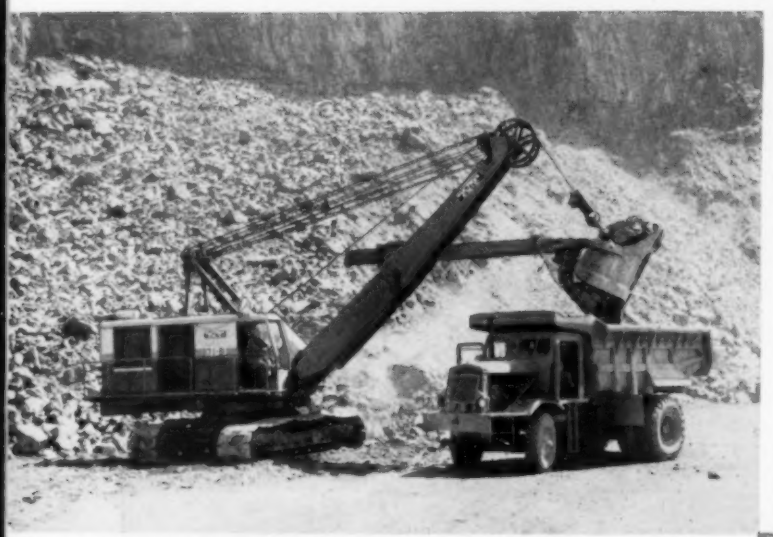
CHICAGO 5, ILL., U.S.A.

From TEXAS to CONNECTICUT . . .

Repeat owners get steady pit output from Bucyrus-Erie shovels . . . You Can, Too

These experienced quarry operators prove their satisfaction in Bucyrus-Eries with repeat purchases. They buy another on the strength of past performances of quality-built Bucyrus-Eries already setting new output standards in their pits.

Look over these on-the-job illustrations and check the comments. Then investigate WHY a Bucyrus-Erie shovel provides more working time each hour of every shift . . . more daily output. Your nearby Bucyrus-Erie distributor will gladly help you select the right size machine for your pit — capacities range from ⅜ to 4 cubic yards. 479E58C



BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

"Obviously, we're satisfied," states the superintendent for New Haven Rock Co., New Haven, Conn. "The 71-B was bought on the basis of performances of our 38-B and 54-B." The 3-yd. shovel works in the Reeds Gap quarry near Wallingford, loading blasted rock for hauling to the crusher plant.

"We bought our third Bucyrus-Erie 22-B on the basis of the past performance of our five-year old 22-B," says K. R. Farquhar, quarry owner, Clinton, Iowa. "That's proof enough of our satisfaction." Farquhar shifts his three ¾-yd. shovels from pit to pit, as needed, in a widely scattered operation. Here, two machines are loading limestone in the Clinton pit.

"Satisfactory in every respect" is the report from Simpson Stone Co., Clarksville, Tenn., on their 1½-yd. Bucyrus-Erie 38-B. It loads granite-like limestone, including frequent removal of large boulders. A ¾-yd. 22-B is also used in this Clarksville pit.

"We bought the 71-B after such good operation of our 54-B and five other Bucyrus-Erie machines," comments C. R. Roth, plant engineer, Servtex Materials Co., New Braunfels, Texas. "We had the 54-B for seven years in rough work with very little trouble." The 3-yd. 71-B works in the quarry loading trucks with stone for the crusher.

COLOR IS IMPORTANT!

NO. 3 OF A SERIES

Write today for prices
All sizes—½" to 5"
carried in stock for
immediate shipment

The early forge man, the blacksmith, knew by the particular shade of fiery red when steel was heated to the right temperature for perfect heat treatment. The modern heat treater uses automatic temperature controls to maintain the same color and temperature to guard his quality. Each Coates ball is controlled for this important step in heat treatment and is typical of the care in manufacture, the rigid quality controls and adherence to product specifications that guarantees the uniformity of Coates Triple-Forged Carbex Grinding Balls.

Coates Grinding Balls are made of fine-grained, high-carbon steel. They are especially forged to attain more perfect sphericity, then heat treated to extreme hardness, but with toughness to prevent shattering under the stress of milling. Call for Coates Triple-Forged Grinding Balls . . . built with care for longer wear.

C857-4

COATES STEEL PRODUCTS CO. CARBEX TRIPLE-FORGED BALLS

COATES STEEL PRODUCTS COMPANY

GREENVILLE, ILLINOIS

LARGEST EXCLUSIVE MANUFACTURER OF GRINDING MEDIA

N.C.S.A. Convention

(*From page* 98)

said that the full effect of the highway program is still a year away. He believes that each state should arrange its program and distribute its work so that the demand for aggregates would not cause peaks and valleys in the demand in different areas. He also urged producers to study price-level depreciation, which takes into account the depreciation of the dollar due to inflation.

Boyd's Address In his annual address, J. R. Boyd, executive director of N.C.S.A., said that the recent raise in dues was the first in many years and was made to keep the association on a sound financial basis in spite of the steadily increasing services it is extending to its members. He told of the work being done by the association on percentage depletion, accident prevention, freight rates, public relations, etc.

Mr. Boyd briefly reviewed the association's safety contest, which began in 1926. The cost accounting manual of the 1930's, he said, is now being revised and will be ready later in the year. In the field of public relations, the New York Trap Rock Corporation's color film, *From Mountains to Main Street*, is now available to members and has already been used by some of them. Mr. Boyd reported that 22 companies are ready to exchange information on operating standards and quarry efficiency. There are now 30 companies voluntarily exchanging labor information. In closing, Mr. Boyd introduced two new staff members: Howard M. Bixby, field engineer; and Bill M. Southworth, assistant executive secretary.

Gray's Report As reported by Joseph E. Gray, association engineering director, the engineering work and program during the last year progressed along several lines of endeavor, including service testing and research.

With the highway program advancing to the construction stage, some urgent problems have arisen in the field. These have formed a large part of the service testing work which—since it helps the individual members— is given priority over the research operations. Among the various projects undertaken was the study of a member firm's top rock and strippings to determine if these would meet certain subbase specifications; comparative testing of the relative merits of different aggregates in base courses, bituminous concrete, and concrete runways; and an investigation of a crushed stone bituminous concrete in terms of slipperiness. In all, three-fourths of the time of the laboratory staff was devoted to work of this type on 45 different projects.

Along research lines, co-operative efforts have been made in several fields. These included a study of the durability of aggregates, an investigation on methods of determining the maximum specific gravity of bituminous mixtures, and one on the method of testing the same type of material for compressive strength. The foregoing projects were in the field of basic research. However, the greater part of the staff's efforts have been in the area of applied research which is of more direct and immediate usefulness to the industry.

In point are preliminary studies made on the shape of particles of crushed stone for surface treatment. A current problem is to obtain recognition of the fact that as the stone sizes become smaller, the proportion of flat or elongated pieces becomes higher. Another area of study involved the sodium sulphate soundness test. A major research project undertaken last year, and still in progress, is the determination of the effect of maximum size and amount of coarse aggregate on the stability of bituminous concrete binder courses.

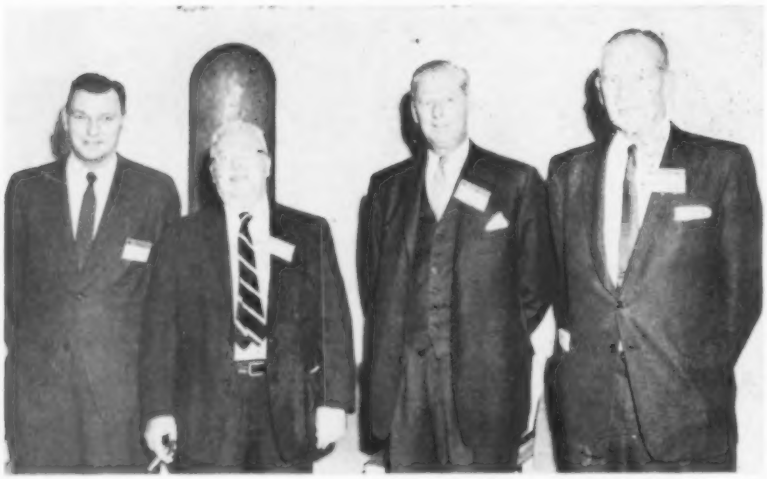
NATIONAL CRUSHED STONE ASSOCIATION
1415 Elliot Place, N. W. Washington 7, D. C.

SUMMARY OF REPORTS OF REGIONAL VICE-PRESIDENTS
COVERING 1957 AND THE OUTLOOK FOR 1958

	New England	Eastern	Central	Southeastern	Northern	Midwestern	British Commonwealth	Summary
1. How did volume of crushed stone business during 1957 compare with 1956?	Avg. Inc. +12%	Avg. Dec. -14%	Avg. Inc. +7%	Same	Avg. Dec. -13%	Avg. Dec. -6%	Same	Avg. Dec. -5%
2. How did price level during 1957 compare with 1956?	Avg. Inc. +5%	Avg. Inc. +5%	Same	Avg. Inc. +4%	Avg. Inc. +6%	Same	Slight Inc.	Avg. Inc. +5%
3. What relation did volume of demand bear to capacity during 1957?	100%	84%	80%	80%	80%	75%	95%	Avg. 90%
4. What percentage (approx.) of crushed stone business in your territory in 1957 went to:								Avg.
a. Highway construction	76%	71%	44%	40%	68%	57%	46%	58%
b. Railroad ballast	5%	6%	8%	10%	9%	2%	5%	6%
c. Building construction	17%	16%	7%	42%	6%	30%	23%	20%
d. Chemical and metallurgical uses	0%	1%	16%	1%	1%	1%	25%	6%
e. Agricultural limestone	0%	2%	7%	0%	6%	8%	1%	3%
f. Riprap	1%	2%	0%	2%	4%	Trace	Trace	1%
g. Other uses	1%	2	18%	5%	6%	2%	0%	7%
5. Do you anticipate much change in this distribution during 1958?	No	No	No	Split Opinion	No	No	No	No
6. What is the prospect for crushed stone business in your territory during 1958?	Good	Fair	Good	Good	Good	Good	Good	Good
7. Has additional aggregate capacity been developed during 1957?	One New Plant	Two New Plants	Same	Several new Plants	No	Expanded Facilities	None	Yes
8. Observations	See attached sheet for observations							

Breakdown by areas:
New England (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont)
Eastern (Delaware, District of Columbia, Maryland, New Jersey, New York, Pennsylvania)
Central (Kentucky, Ohio, Tennessee, West Virginia)
Southeastern (Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Virginia)
Northern (Michigan, Minnesota, Montana, Nebraska, North Dakota, South Dakota, Wisconsin)
Midwestern (Illinois, Indiana, Iowa, Kansas, Missouri)
British Commonwealth (Australia, Dominion of Canada, New Zealand, Union of South Africa, United Kingdom)

No information available for the following:
Southwestern (Arizona, Arkansas, Louisiana, New Mexico, Oklahoma, Texas)
Western (California, Colorado, Idaho, Nevada, Oregon, Utah, Washington, Wyoming, Territory of Hawaii)



G. H. Donaldson (Carbon Limestone Co.), Wayne W. King (W. S. Tyler Co.), and C. H. Krause Sr. and H. C. Krause (Columbia Quarry Co.).

Above: A contingent from the Dolese & Shepard Co.—Bart P. Dooley, Norman Olson, Albert Hock, Al Jason, and Joseph Hock.

Representatives of the Massachusetts Broken Stone Co. were: Walter Wandeloski, Ralph Wagner, Richard Robinson, and Owen Hillberg.

Future research is contemplated on stabilization and on such points as whether the trend toward smaller sized aggregates is fundamentally sound.

Mr. Gray noted that a field engineer employed a few months ago has already carried out an important assignment relating to obtaining information on state practices in inspection and control of graded aggregate base course construction. This information was the basis of an article recently published in the *Crushed Stone Journal*.

The engineering director also commented on a 3-day engineering conference which was held in Washington, D. C., last fall. A series of 21 lectures given by association engineers and guest speakers covered a wide range of the technical aspects of crushed stone and its uses.

Regional Activity A summary of the regional vice-presidents' reports on tonnage, prices, demand *vs.* capacity, and other factors, along with reactions to prospects for the coming year, was provided in tabular form and distributed to those attending.

The breakdown, as shown in the accompanying chart, prepared by N.C.S.A., closely parallels the data reported on the annual PIT AND QUARRY survey of the aggregates industries.* In both cases, the producers have expressed almost universal optimism, and have indicated widespread expansion of capacity.

Highway Program A thorough analysis of our future highway needs was presented by Pyke Johnson, past-president of the Automotive Safety Foundation, in his address entitled, *Threatened*

* See Review and Forecast Section, PIT AND QUARRY, January, 1958.

Murl M. Clark, Leon Meshberger, and Herman Neuen, all of Meshberger Stone Co.

step in the right direction; but the proposals do not go far.

In fact, it was noted that the President's program does not contemplate a national right-to-work law, nor does it condone bringing labor unions under anti-trust laws. Among the positive proposals are the restoration of democratic processes to union internal activity, public disclosure of union and union-employer financial dealings, and strengthening of a few features of the Taft-Hartley Act.

Two elements in proposed labor

Mrs. Harry Clark, Mrs. Norman E. Kelb, and Mrs. Wayne W. King were hostesses for the ladies' entertainment activities.

Road Blocks in the Highway Program. The motor revolution is now in full swing, and travel is measured in time instead of miles; but the flaw in this picture, Mr. Johnson declared, is that there are obstacles to movement; and the situation can get worse, due to the steady increase in the number of cars and the annual mileage driven.

The freeway, Mr. Johnson believes, is the only answer to both city and suburban congestion. It will also improve travel safety. The present record of 5.9 fatalities per 100 million miles driven compares to only about one-third that rate on the 3,100 miles of controlled access roads now in use. The latter, incidentally, carry the heaviest traffic.

One of the problems confronting the road program is the sharp increase in cost from the original $27 billion to over $37 billion. Mr. Johnson stated that Congress must soon decide whether to extend the time, reduce the mileage, increase the taxes, or make direct contributions from the Federal Treasury.

TAXES, LABOR, MERCHANDISING, PUBLIC RELATIONS

Taxes, Labor The current *Legislative Outlook* was outlined for the members by John F. Lane, of Gall, Lane and Howe, general counsel for the association. Referring to the Supreme Court's recent denial of *certiorari* on certain brick and tile, and cement percentage depletion cases, Mr. Lane noted that many taxpaying corporations in those industries had a big windfall in tax refunds. This fact has led the Treasury Department to consider legislative proposals directed at "cut-off" points and ordinary treatment processes for percentage depletion purposes. Some congressmen are also paying close attention to this situation, it was said.

In the labor picture, the McLellan investigation, fortunately, has aroused considerable public opinion. A common denominator in all the hearings to date has been the exposure of the power of the few labor union leaders over the millions of rank and file members.

As the speaker indicated, since such privileges of labor unions as tax exemptions, compulsory membership, etc., stemmed from congressional legislation, it is up to the same body to take corrective steps. It was added that the Administration's labor proposals are merely a legislation are of significance to the industry, it was stated. First, there would be no necessity of elections prior to NLRB certification of building and construction unions as bargaining agents with contractors. As a consequence, employers could make agreements with unions before the men needed were hired. Although this feature primarily concerns building and construction, it was pointed out that it might possibly be applied to quarry operations. The second element was described as the proposed weakening of secondary boycott provisions of existing legislation as they relate to construction, building, and repair labor areas.

The Need for Merchandising The present need for optimism and merchandising was outlined in an inspirational address

The newly elected board of directors of the N.C.S.A. Manufacturers Division.

by Frank Lovejoy, a former top business executive and a well-known speaker. His message had the provocative title, *The Price of the Best Is Always All the Rest*. Only a negative attitude can hold us back he declared, and only through competition can we improve on our methods and products. Mr. Lovejoy virtually showered his listeners with such statements as: "Don't give a salesman a desk, or he'll sit behind it!" and "You can't make a sale unless you expose yourself to customers." In closing he gave his six basic rules of selling:

1. Don't talk too much—or you tell on yourself.
2. Never assume an argumentative manner—or the customer will.
3. Inquire first, attack afterward.
4. Be sure the buyer understands that you understand his objections.
5. Stick to one key issue—most people can only take in one thing at a time.
6. One word that can save you a headache is "Why?" Make your customer say *why* he doesn't like your product.

Public Relations The industry's contributions to the economy and welfare of our society should be a source of pride to the producers in this field. This was emphasized by Earl P. Holwadel, vice-president, Ohio Gravel Co., in reporting on *An Effective Public Relations Program for an Aggregate Producer*.

It was pointed out that others can hardly be expected to hold a proper regard for the industry's importance if the members themselves fail to display pride in their activities. While noise, dirt, and unsightliness are often present, due to the nature of the operations, the products are nevertheless fundamental to our existence and serve purposes that overcome the unpleasantness of their production.

With a thought-provoking approach, Mr. Holwadel enumerated several areas in which the industry's products have an impact on the life of every man, woman, and child. He stated that the role of stone in the general economy has earned a place of dignity, and noted typical uses in such areas.

In the realm of improved public relations efforts, these suggestions were made: (1) individual and collective adoption of a public relations policy so urgently needed by the industry; (2) the study on the part of each producer of ways and means toward acquiring neighborly, courteous co-ordination in his area of operation; (3) self-evaluation directed at improvement of general plant appearance and reduction of any public nuisance caused by the industry; and (4) the consideration of plantings and landscaping on depleted property for the improvement of appearance.

As to whether such a program

(*Continued on page* 115)

Among the visitors at the equipment exhibit were Jack Lannon, Jack Lambert, George Lambert, and J. B. Lambert of Lambert Bros. Div., Vulcan Materials Co., Knoxville, Tenn.

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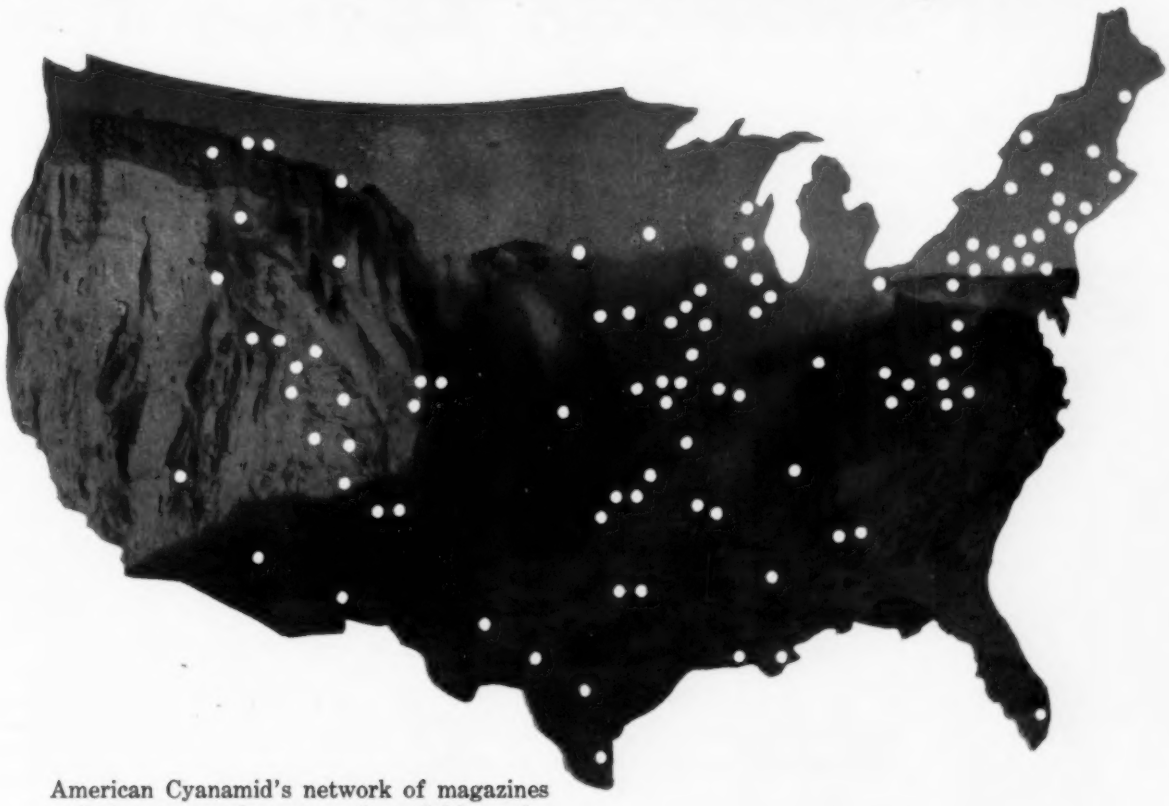

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Second Dayton Plant Of American Aggregates

By BUREN C. HEROD

ANOTHER ON THE SPOT REPORT

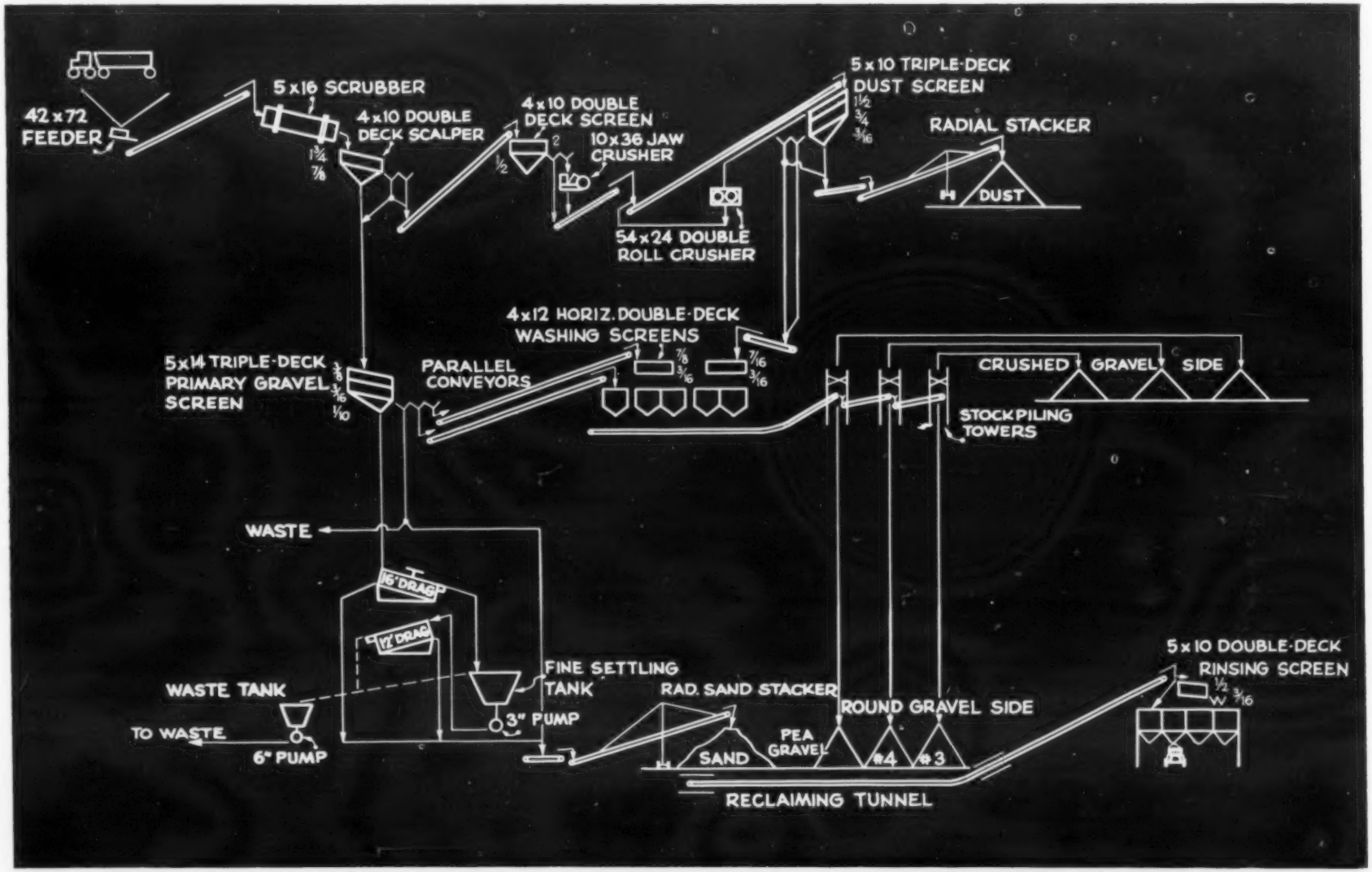
WITH an efficient plant in operation on the north side of Dayton for several years, the American Aggregates Corporation, nevertheless, recently found itself at a competitive disadvantage with respect to a growing market area in the southern and adjacent areas of that city. Although growing demand was present—primarily in housing but also in interstate highway construction on Route 25—sufficient specification aggregate was apparently not being produced in that section.

Faced with an unfavorable transport situation from the northside plant, the company began making a close study of the southern areas about five years ago. As a result of that investigation, a tract of approximately 150 acres was acquired adjacent to the Great Miami River in the south portion of Dayton, in 1953.

Shortly thereafter initial operation of this property was started with a portable plant, and only crusher and bank run materials were produced. Simultaneously, however, the firm's engineering staff was developing plans for a permanent installation with a designed capacity of 250 to 275 t.p.h. With structural components fabricated in company shops and erected by company crews, construction was started late in 1955. The new complete plant went into operation in 1956 and has already produced in excess of 330 t.p.h.

While these activities were in progress, the company came face to face with a new development, destined to add interest to the project — that of proposed zoning restrictions.

A view at the new plant of American Aggregates Corp., showing the structure housing the scrubber, scalper, and primary gravel screen. At the right is the plant feed belt connecting with a hopper and feeder under a truck ramp.



Flow diagram of the new American Aggregates plant in the south part of Dayton.

Left: From the scrubber (top) plant feed flows to the double-deck scalper, bottom.

Below: Secondary screening is handled by two horizontal units mounted over these bins. The inclined belt (right of center) transfers finished products from the bins to the stockpiling towers (right).

be topped with other spoil or waste to form a future levee.

During early operations, excavation from the wet pit has been handled by a 3-cu. yd. Lima dragline. With an 85-ft. boom, this unit has a digging depth range of 30-ft. At some time in the future it will probably be replaced or joined by a larger unit.

Designed to incorporate a high degree of flexibility, the plant can produce both crushed and round gravel and dust simultaneously. In addition, provision has been made for finished product handling whereby one man at a control panel can accomplish the stockpiling of seven different products. Stockpiling arrangements are so designed that round gravel finished materials and crushed products are separately stockpiled in parallel lines on opposite sides of stockpiling towers.

Although the tract as originally acquired had been unzoned and regarded by the county board as a flood plain district, the subsequent formation of a township zoning board led to complications when the latter body zoned the site otherwise and applied a non-conforming use designation to the plant. The township board also passed a resolution requiring that permits be obtained for such use. While the legality of such ordinances and resolutions has not been established, the firm has nevertheless attempted to comply therewith. In litigation which ensued, the corporations right to mine and remove sand and gravel from the area was sustained by the courts.

In the midst of these unexpected difficulties, work was continued on the planned development of the deposit. Containing recoverable material as deep as 50 ft., the deposit has an excellent gradation. Approximately 20 per cent of the material in place is plus 2-in. in size, and another 40 per cent minus 3/16-in.

The first step toward establishing the wet-pit operation was the digging of a pond near the Miami River. This initial cut was made larger than would be ordinarily necessary, to permit future waste dumping. However, there has been very little waste material in the

processing since the plant was placed in operation.

The first cut was followed by the opening of a second, in line with the former but closer to the plant installation. Another substantial area has been cleared for future pit expansion. Removal of overburden has been handled by a contract operator with drag scrapers, who has placed the material in a long pile on the thin strip of the property between the pit and the river. This material will subsequently be pushed back into the depleted pit and will

The round gravels are stockpiled over a reclaiming tunnel and may be put through further rinsing above truck loading bins, as desired, while the crushed materials are direct loaded from stockpile *via* a clamshell or front-end loader. At an intermediate point in the flow between plant feed hopper and finished stockpile are truck bins from which the materials may be loaded into haulage units in lieu of stockpiling.

The pit dragline discharges over a 9-in. spacing rail grizzly at the top of a field hopper. The latter is

mounted on steel columns to give clearance for drive-through of the two 15-cu. yd. bottom dump Euclid trucks used for haulage. Pit run material is drawn from the field hopper through manually operated slide gates in loading for transfer to the plant.

At the plant site the haulage units pull up on an inclined ramp to discharge into the feed hopper. From this point the gravel is transferred *via* an air cylinder gate and Jeffrey feeder to the plant feed conveyor. Equipped with a Republic deep-V-ribbed 30-in. by 180-ft. belt, this unit, as well as most of the others in the plant conveying system, are equipped with Dorris drives.

The feed belt enters the top of the five-story steel framework and corrugated metal siding structure that houses a scrubber, scalping screen, and primary gravel screen. Most of the processing water used in the flow is applied in the 5-by 16-ft. scrubber. Approximately 2,500 g.p.m. is supplied from a settling pond through an 8-in. Amsco pump. This is done in order to get the maximum suspension of sand. Scrubber discharge at as high as 50 percent solids flows to the following scalping screen—a 4- by 10-ft. Allis-Chalmers double-deck Ripl-Flo unit with screen cloth having 1¾-in. square openings on the top deck and ⅞-in. woven wire openings on the bottom.

The top deck retained fraction is chuted to a short belt going out of the primary screening building to a flow in which crushed and dust sizes are made. As an added factor of flexibility, the lower deck retained fraction may also be chuted to that belt or, along with the bottom deck throughs, to the lower primary gravel screen — a 5- by 14-ft. Allis-Chalmers triple-deck Ripl-Flo.

Fitted with ⅜-in., $\frac{3}{16}$-in., and 10-mesh screencloth on the top, middle, and lower decks, respectively, this screen separates the round gravel fractions on the top two decks for transfer to two parallel gravel belts on which they are transferred to secondary screening. The plus 10-mesh fraction retained on the lower deck can be wasted or chuted to a sand belt on which it is taken to an 88-ft. diameter radial sand stacker. Minus 10-

William E. Hole Jr., left, vice-president, Ohio district, American Aggregates Corp., and M. R. Maxwell, plant superintendent, conferring on operating matters.

One of the sand drags and its settling tank (lower right). In the background is the radial sand stacker.

Stockpiling of finished products from seven boom conveyors can be handled by one man at this control panel.

The three stockpiling towers. Crushed material stockpiled on the left is recovered by a front-end loader or a clamshell crane. Round gravels are stockpiled on the right over a reclaiming tunnel.

mesh material passing the bottom deck is flumed to a company-designed and fabricated 16-ft. rotary sand drag.

Overflow from this coarse sand drag is flumed to a settling tank, from which the sand is transferred *via* a 3-in. Amsco pump to a 12-ft. fine sand drag of similar construction. In the production of mason sand the underflow from both drags is chuted to the same belt for transfer to the radial sand stacker. The plus 10-mesh fraction referred to above is also chuted to blend with these materials when it is desired to produce and stockpile concrete sand.

As a finished product, the middle deck retained fraction ($^{3}/_{16}$-in). from the primary screen is chuted to a 24-in. by 82-ft. inclined belt conveyor and transferred to a truck-loading bin. The latter is one of the intermediate bins noted previously. On a parallel 24-in. by 93-ft. conveyor, the ⅜- by ⅞-in. round gravel is transported to discharge onto a Cedarapids 4- by 12-ft. horizontal vibrating screen. This washing unit, fitted with screen cloth of ⅞- and $^{3}/_{16}$-in. openings, respectively, on the top and bottom decks, is mounted above two more of the intermediate bins.

Another pair of these 60-ton bins supports an identical screen on which products from the crushed gravel flow may be processed.

As noted above, the flow through crushed gravel processing originates with the scalping screen, from which the plus 1¾-in. material (and plus ⅞-in., if desired) are chuted to a short belt. From the latter they are transferred to a 4- by 10-ft. Cedarapids horizontal vibrating screen, a component of the portable plant with which production was initiated at this site. A single-deck unit, this screen is equipped with 2-in. openings from which the retained material is chuted to a 10- by 36-in. jaw crusher set at ¾ in.

The crusher discharge and minus 2-in. throughs from the screen are joined on a 36-in. conveyor belt and carried to a 5- by 10-ft. triple-deck Allis-Chalmers Ripl-Flo. This "dust" screen has 1½-, ¾-, and $^{3}/_{16}$-in. openings, respectively, on the top, middle, and bottom decks. With this installation, it is possible to make two dust-filled fractions and one straight dust product (minus $^{3}/_{16}$-in. bottom deck throughs). The top-deck retained fraction and normally the middle-deck retained fraction are chuted to a 54x24 double-roll crusher, from which the discharge is recycled to the screen. Dust screen products are chuted to a 70-ft. radial stacker for stockpiling of dust and dust-filled fractions.

Either or both of the middle and bottom deck retained fractions may be transported from the dust screen on a 24-in. by 93-ft. inclined belt conveyor to the horizontal crushed gravel washing screen over the last two intermediate bins. This screen is fitted with $^{7}/_{16}$-in. opening top deck and $^{3}/_{16}$-in. opening bottom deck. As in the case of the un-

(*Continued on page* 122)

From the reclaiming tunnel (left) stockpiled round gravels are transported to a rinsing screen above the truck loading bins (right).

In session here is the newly elected N.C.S.A. board of directors.

N.C.S.A.

(*From page* 108)

should be conducted on an individual basis, collectively, or both, the speaker stated that a great many people strongly recommend both. Individual companies should provide the local aspect of advertising and the neighborly spirit to support the effort of the industry. Any beneficial effort of individual action should be forwarded to the Washington office for the benefit of the industry. In turn, the latter office (N.C.S.A.) should provide the membership with bulletins for their individual use.

Phrasing a query as to whether or not a public relations program is essential, Mr. Holwadel pointed out that if such a program is not developed in the near future, it may soon be too late. It was noted that producers must not show timidity in acquainting the general public with the importance of the industry and its products. Most large businesses in this country have similar need for public relations efforts and have budgeted for it, with subsequent benefit. In conclusion, the speaker underscored the importance of no longer delaying a program that should have been initiated long ago.

Telephone Techniques A fundamental factor often overlooked in the impressions created by company personnel is the telephone technique—or lack of it—displayed by both management and employees. This fact and its psychological ramifications were interestingly discussed by Charles Bury, communications consultant. To enhance relations with existing or potential customers, there is now a trend on the part of top officials to take their incoming calls direct. As a corollary, many top management men are also beginning to make their own outside calls, rather than having secretaries do so.

It was noted that high-powered advertising and promotion campaigns can be easily ruined if poor telephone techniques are interjected between the producer and the customer who may be interested in the former's product. A pleasing voice, a good approach, the ability to listen, and evidence of a sincere interest in the caller's problems are paramount in creating good impressions in telephone communications.

OPERATING SESSION

Quarry Efficiency Data made available by 23 companies was analyzed by T. C. Cooke, president, Lynn Sand and Stone Co., Swampscott, Mass., and presented in a discussion on *Quarry Efficiency Standard Record Keeping*. These data are reported on forms developed by N.C.S.A. and used in a survey of quarry efficiency among members of the industry.

A rather consistent pattern of tons per man-hour was found, these ranging between a low of 4.17 and a high of 7.71. For purposes of his discussion, Mr. Cooke made comparisons between quarry groups on the basis of hardness of stone quarried, tonnage produced (more or less than 500,000 tons), size of primary crushers, and type of primary crusher.

It was shown that operations in the hard stone category had an average of 5.69 tons per man-hour, as compared to 5.89 in softer material, and the former experienced about 3.5 percent higher cost.

Companies in the plus-500,000-ton group enjoyed a cost advantage of about 10 percent over operations with production below that figure, and averaged 6.16 tons per man-hour. (5.58 was the average in the lower output group.)

Larger primary crushers were considered as 48x60 jaws and 42-in. gyratories, and were compared with 42x54 jaws and 36-in. gyratories. The former were found in the survey to average 6.3 percent more efficiency. Tons per man-hour was 6.05, compared with 5.69 in those plants with the smaller primary crushing units.

In summary, the most efficient quarries apparently are working in a relatively softer stone, produce over 500,000 tons per year, and are equipped with large jaw crushers for primary reduction.

In reply to a question on the men considered in arriving at the efficiency figures, it was stated that everyone under the superintendent was taken into account, with the exception of strippers and watchmen. The activities of the former are too variable, and the latter is in a non-operating category. Included were all men from drilling to maintenance crews.

Efficiency Studies Time studies made by staff members of the Bureau of Public Roads were discussed by Morgan J. Kilpatrick, head of the production cost section of that agency. In addition to time investigations, his research program includes measuring quantities and analysis of costs. In the course of this work, Mr. Kilpatrick's group has made some interesting findings.

With respect to shovels, three factors control output—speed of the dipper cycle, size of the dipper load, and extent of delays. Speed of the dipper cycle is a composite of four distinct phases—loading, swinging, dumping, and return. Large fragments have an undersirable effect on the first three. Loading in poorly fragmented material takes about twice as long as otherwise; and an average cycle time on a 60- to 80-degree swing can vary from 17 to 30 seconds, depending upon the frequency of large fragments. In poorly blasted material an average dipper payload may be less than 50 percent of the rated dipper capacity. In well blasted material it can exceed 90 percent.

In another important quarrying operation—drilling—it was found that actual drilling time was 43 percent of available working time. The balance was divided about as follows: ⅓ in cleaning holes, changing steel, etc., and ⅔ in maintenance, repair, blasting, moving, and other activities. It is obvious that any effort to lessen the 57 percent time factor in the latter will result in more drilling footage.

Haulage also requires attention to co-ordination of three operations, involving shovel, trucks, and crusher. An analysis indicated that on the average, trucks wait at the shovel 15 percent of the time, and also wait at the crusher up to 15 percent of the time. All delays, including maintenance, add up to about 40 percent.

These problems do not differ greatly with respect to crushers and crushing plants. Studies indicate that up to 25 percent of crusher operating time is lost due to oversize fragments in the feed and intermittent feed.

As noted by Mr. Kilpatrick, poor fragmentation is a production trouble spot, affecting several phases. Along that line, it was indicated that dynamite, if it is considered to have a high work potential and is so used, will give more return per dollar of investment than any other item of equipment.

Plant Design Several factors found in *Recent Trends in Plant Design* were discussed by R. T. Lassiter, New York district manager, Western-Knapp Engineering Co. Using slides to illustrate various points in his paper, the speaker described the over-all changes in crushing plants as a gradual evolution, rather than a revolution.

Demand for increasing tonnages, particularly in smaller sizes, combined with rising costs, more precise specifications, and a relatively stable market price, has led the industry to increased mechanization. The greatest development, it was noted, has been in material-handling equipment, principally the belt conveyor.

Other trends include the use of surge piles; the placing of the primary crusher in the quarry—as near the face as possible; replacement of revolving screens by vibrating equipment; the use of pan feeders ahead of jaw crushers; and the storage of material in stockpiles over reclaiming tunnels.

The tendency to spread plants horizontally rather than using high vertical structures also has grown during the last 20 years. Another strong trend noted is the establishing of a primary surge pile after the primary crusher, thus divorcing the quarry and plant operations, and allowing the latter to operate independently. A variation of the surge pile is a semi-finished material stockpile in which the store of intermediate size is stored before final sizing.

Increased mechanization has been accompanied by increasing application of centralized control centers from which a large part of the operating phases can be regulated with the minimum of man-power.

Not only has the number of screens in use been increasing, but the size of the units has also increased to as much as 20 ft. in length. Progress has also been made in various methods of tramp metal detection, and there have been recent instances of the installation of closed-circuit TV.

Mr. Lassiter noted that competition from portable plants is a very real problem to operators of permanent plants. The latter producers, it was suggested, should give consideration to incorporating the use of portable plant in overall operations, wherever feasible.

In conclusion, it was indicated that a small plant has just as many basic problems as a large facility; the smaller installation may have a greater need for engineering skill in layout, since lower volume must be offset by greater efficiency.

Operating Helps A panel comprised of W. H. Ruby (Acme Limestone Co.); E. J. Reichart (Harry T. Campbell Sons Corp.); T. C. Cooke (Lynn Sand and Stone Co.); and L. J. Burriss (Weston & Brooker Co.) discussed *Timely Tips on Operating Problems,* developed from experience in their individual operations.

An unusual but effective application of an instrument widely removed from this industry was noted by Mr. Ruby. He described the use of a stethoscope in checking antifriction bearings. The item was used to good effect and resulted in saving bearings which might have been damaged.

Mr. Reichart discussed a number of uses for old tires, and presented slides showing several of these. Among the applications were drop ball suspension, conveyor skirt board mounting (in keeping larger fragments from spilling off a belt), installations at the discharge end of a large stone conveyor, protective bumpers on utility poles, and sign bases (filled with concrete). Also described by Mr. Reichart were the use of metal detectors over conveyors, an automatic forced-feed lubrication system on crushers, and an electric trip switch on a conveyor installation, where the lateral movement of the belt actuates the switch and shuts off the conveyor drive.

The facility of a self-propelled welding unit was described by Mr. Cooke. This unit is used for many field jobs in the operation, and car-

ries with it all needed equipment. The speaker also pointed out that hand power tools can be used to good advantage. For example, powered hand saws facilitate clearing timber and brush prior to stripping operations.

An ingenious solution to the problem of fitting a new shaft into a crusher jaw—with no press available—was described by Mr. Burris. On this job, the jaw was bathed in hot water and the shaft encased in dry ice. When it was time for assembly, the shaft, lowered by a crane, was readily slipped into the jaw bore. Mr. Burris also described an internal-external lubrication system on gyratory crushers.

SKID RESISTANCE, ROAD PROGRAM, AGGREGATES, BLASTING

Skid Resistance *This Problem of Skid Resistance* is a complex one, involving more than road surface, as described by A. T. Goldbeck, engineering consultant, N.C.S.A. It is of concern to the crushed stone producer, since there is a widespread tendency to look only at the road surface as a cause when skidding occurs.

Actually, the driver, the type and condition of the vehicle, and weather conditions appear to be factors of greater weight. An investigation of skidding accidents in Virginia showed that less than 1 percent took place on dry pavement—18 percent were on wet surfaces, and 40 percent involved ice or snow.

As to what causes a pavement to become "slippery," Mr. Goldbeck noted that sand aggregate particles project from a newly finished concrete surface, but that after wear these particles lose their "tooth," or friction. It was found that the strength of the mortar has a direct bearing on the length of time the "tooth" can be maintained.

In bituminous surfaces, slipperiness develops if the bitumen works to the surface. Improper proportioning, which results in bitumen flooding to the surface, must be avoided.

Although the fact is not generally recognized, the sliding action of wheels—in a skid—actually takes place while the wheels are turning. The composite action contributes to the loss of "tooth" in a pavement wearing surface.

A cure for the situation can be found in the application of ¼- to ½-in. of siliceous sand asphalt mix to the existing surface. This procedure was tested in the study of road surfaces in Virginia. The importance of the problem is evident from the fact that an international skid prevention conference has been scheduled—to be held at the University of Virginia later this year.

Aggregates for Highway Program Citing the 778,000-mile network of the primary and secondary systems eligible for construction or improvement with Federal Aid funds, Harold Allen, chief, division of physical research, U. S. Bureau of Public Roads, pointed up the fact that new construction and maintenance of the existing system may well tax aggregate production facilities to their limits.

It is estimated that the demand on commercial aggregates producers in 1958 will be about 250,000,000 tons—with an increase to 300,000,000 tons in 1960. And the demand will probably continue at this rate through 1967. On the assumption that two-thirds of the total will be coarse (plus ¼-in.) material, and that 50 percent is crushed stone, 100,000,000 tons per year of this product will be required for commercial operators alone.

In view of the fact that the known supply of aggregates is limited in some states, nearly depleted, or non-existent in other areas, or that it has a prohibitive cost due to long hauls, it is important that the best possible use be made of the material available.

With respect to usage, Mr. Allen noted the following classifications: (1) use in structural concrete, concrete pavement, bituminous surfaces, and bases courses; (2) use in sub-bases under concrete pavements or under base course for bituminous surfaces, and in shoulders.

For use in the first classification, aggregates must be carefully graded and reasonably free of deleterious materials. Commercially established plants usually produce material in this class, it was noted.

While aggregates in class 2 must have satisfactory quality for such use, the grading of material for sub-bases may be less critical, and more deleterious material may be tolerated. Stone screenings, often considered as waste, have frequently been used in sub-bases.

Highway departments are being urged to give careful consideration to the use of class 2 materials when preparing plans and specifications, in order to conserve the more expensive and scarce class 1 group. Since the Bureau of Public Roads will continue to insist that aggregates used must insure satisfactory performance of structures and pavements, there will be a reluctance to down-grade standards in order to obtain a larger volume of materials.

The speaker indicated that the following characteristics of aggregates for use in highway are usually specified: grading, percent of wear in Los Angeles Rattler test, and soundness or durability tests. A comparison of state specifications for coarse aggregate with the Simplified Practice gradings adopted by the industry in 1948 shows that in 7 states there is exact compliance, in 21 states there is very close compliance, and in 20 states the gradings are materially different from the Simplified Practice table. It is believed that, as an expeditious measure, a revision of the Simplified Practice recommendations — on a regional basis—holds the most promise.

With respect to abrasion loss, it has been long known that aggregates showing a high loss in the Los Angeles machine usually result in concrete of lower strength and in excessive breakage under rollers in bituminous construction. For the latter operation, a maximum loss of 40 percent or less is almost imperative, Mr. Allen stated.

Soundness tests and allowable loss shows wide variation among the states, it was indicated. In 35 states, the sodium or magnesium sulphate test is used, and in 6, the freezing-and-thawing method is used. Seven states have no requirement. It was noted that the bureau of roads staff considers actual freezing and thawing to be a more reliable test. However, elaborate equipment is required to make the test under AASHO method T-103. This procedure is currently under investigation, in order to develop a

rapid method that does not require costly equipment.

The above "purchase specifications" are presently the primary concern of the highway engineers, Mr. Allen stated.

Blasting An unusual and interesting movie in sound and color on *Blasting Vibrations—Cause and Effect*, was shown through the courtesy of the Hercules Powder Co. Narrated by Dr. L. Don Leet, internationally known seismologist—who also played a leading role in the film—the movie depicted some of the common misconceptions in the public mind concerning blasting and consequent vibrations.

By means of seismographs and strip charts recorded by these instruments, it was shown that quarry blasting—at a very nominal distance from the site—does not produce as much vibration in a building as a passing truck, the slamming of a door, or even the act of walking across the floor. In fact, the commonness of these "minor" disturbances has created such a conditioned response (or rather, lack of it) in the public that people are generally completely unaware of the vibrations so created.

On the other hand, the sound of blasting is uncommon, and the very strangeness has all too often caused people to jump to the conclusion, erroneously, that this activity is damaging to their property. In view of the fact that blasting, while sometimes perhaps startling, does not have as much effect as many factors in daily living, education of the community near which quarrying and blasting occur will be a substantial help in public relations.

Social Activities The greeting luncheon on the first day of the convention was presided over by D. C. Harper (Southwest Stone Co.). Following the presentation of the safety awards noted previously, Mr. Harper introduced the featured speaker, Louie E. Throgmorton, vice-president and director of public relations, Republic National Life Insurance Co., Dallas, Tex.

Activities on Monday evening were centered on the N.C.S.A. Frolic—an occasion set aside specifically for fun and relaxation. Unique entertainment, an excellent meal, and dancing assured an enjoyable evening.

At the general luncheon on Wednesday, the presiding officer was W. S. Weston Jr. (Weston & Brooker Co.), and the featured speaker was Jack Raymond, formerly foreign correspondent for the *New York Times* and now assigned to its Washington bureau.

The group's 41st annual meeting was closed with the yearly banquet. In addition to this dinner party, and the activities above, other social activities for the ladies attending the convention included a tea and a luncheon and fashion show. Hostesses for the ladies' entertainment were Mrs. N. E. Kelb, Mrs. H. A. Clark, and Mrs. Wayne W. King.

Washington News

(*From page* 12)

exemption from the present level of $600.

Even the Democrats are not likely to support some of the "quickie" proposals which are heard in Washington. Among these is the proposal to cut the withholding tax in half for a period of six months, or perhaps longer until the present crisis is over, or the proposal to double the allowance for each exemption on the withholding tax, again for a period of six months or longer, depending on developments. Such plans, if adopted, would provide a sharp immediate increase in take-home pay. They are strong medicine indeed. While they would probably give the economy a "shot in the arm," like most such drastic treatments, there would also probably be a substantial reaction and an after effect which cannot now be anticipated.

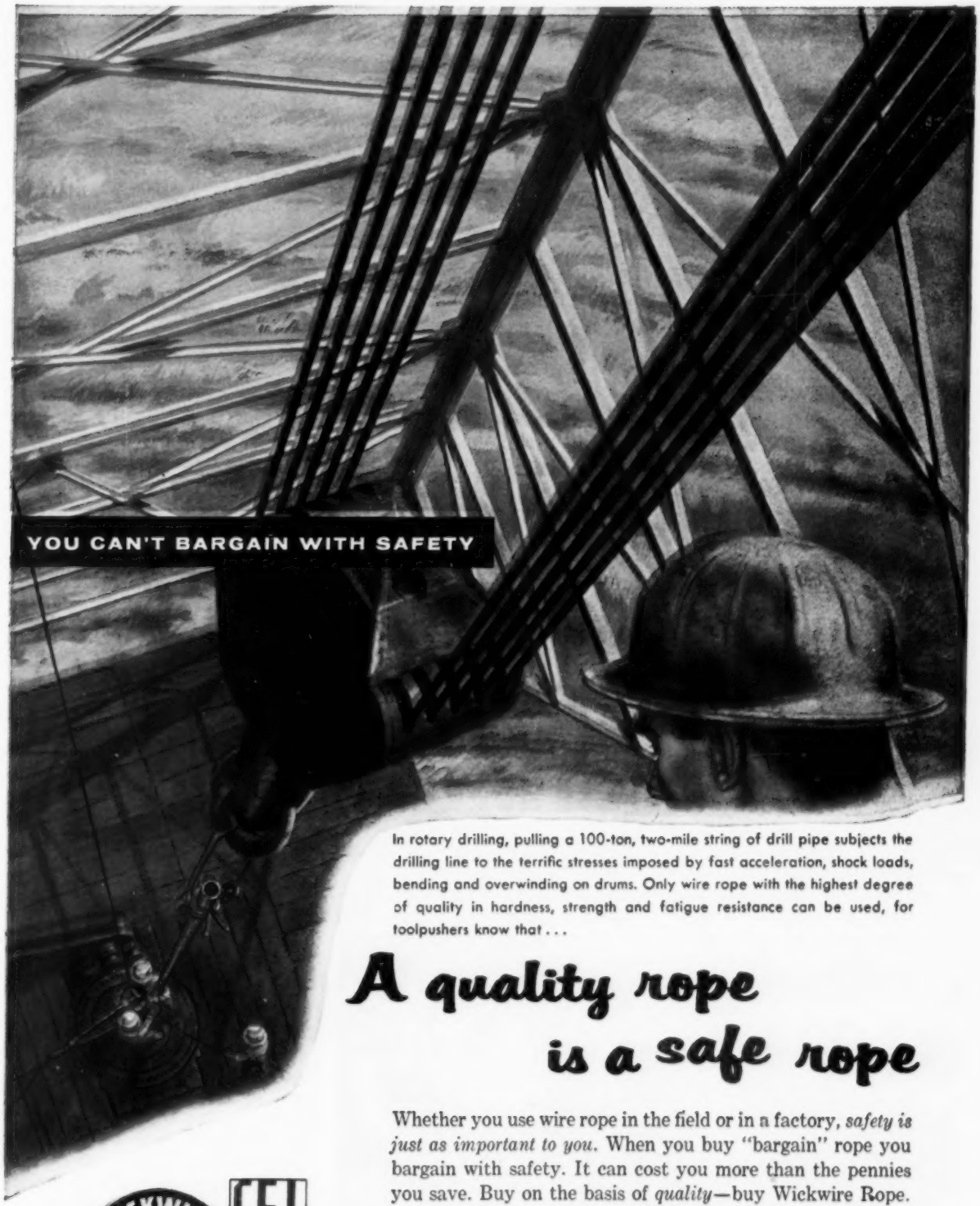
The staff of the Joint Congressional Committee on Internal Revenue Taxation has worked out 20 different tax-cutting plans which are currently getting the most attention in Congress. These range all the way from the "quickie" suggestions described above through such very modest proposals as only raising the standard deduction from the present level of 10 percent of income up to the maximum of $1,000 to 15 percent of income up to the maximum of $1,500.

The principal question which will be discussed, and the discussion will probably be heated, is whether tax rates should be cut so that most of the advantages go to low income people, who presumably would spend their additional take-home pay for consumption goods, or whether the tax cut should be an across-the-board cut affecting all income levels, including the high income people, who presumably would invest some or all of their tax savings. The former type would encourage the consumer goods industries, and the latter would encourage the capital goods industries. The effect of the former type of tax reduction would probably be felt sooner, while the effect of the latter would probably be greater and more lasting.

In the present environment, with an election coming up, the thing to expect is a program, or a series of programs, designed to influence as many votes as possible and, therefore, as many different people as possible. It is reasonable to expect that this will be done in the usual Washington manner, namely, by trying a little bit of everything. Thus, the Nixon type of tax program which will be aimed at putting money in the hands of customers, investors, job givers, etc., is the most likely result. In addition, however, there is no doubt that the spending programs will also go forward.

Curiously, the danger is no longer that government will fail to take action, but, rather, that too much action may be taken. If all the suggested programs were to go forward, there is no guarantee that this would solve the recession problem; but it would be virtually certain to create or intensify an equally serious problem, that of a rising price level and a wide-scale inflation.

A cautious policy would seem to call for an overall plan with built-in controls, even if these were there only on a stand-by basis. But at the moment there is no talk about controls at all. The result may well be that when the recession crisis is overcome, the next crisis will already be upon us and; in what is now a time-honored tradition, Washington will continue to fumble on from crisis to crisis.



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5736

At the head table at the convention luncheon were (left to right): Taisto Laine, Hanna Coal Co.; Raul F. Royster, assistant commissioner for operations, Bureau of Public Roads; John H. Riddle, Riddle Quarries, Inc., and Arthur R. Alvis, Alvis Limestone & Concrete Co., directors; Congressman Frank M. Clark of Pennsylvania; President-elect Paul W. Seitz, May Sand and Gravel Corp.; Senator Francis Case of South Dakota; Robert M. Koch of N.C.L.I.; Congressman Emmett F. Byrne of Illinois; President J. B. Mount, Maymead Lime Co.; Herschel Newsom, master, National Grange; W. L. Bryan, Bryan Rock Products, Inc., director; Major General Louis W. Prentiss, executive vice-president, American Road Builders Association; and Thomas B. Stafford, Vermont Marble Co., regional vice-president.

status of highway program chief concern at

N.C.L.I. Convention

By WALTER E. TRAUFFER

Robert M. Koch, executive vice-president, N.C.L.I.; President-elect Paul W. Seitz, May Sand & Gravel Corp.; Congressman Frank M. Clark of Pennsylvania; President J. B. Mount, Maymead Lime Co.; Congressman Fred Schwengel of Iowa; and Director L. R. Falk, L. R. Falk Construction Co.

THE National Crushed Limestone Institute, Inc., held its third annual convention on January 24, 1958, at the Statler Hotel, Washington, D. C. This meeting immediately followed the convention of the National Agricultural Limestone Institute, Inc., on January 22 and 23. Aside from routine business matters, the program was as usual slanted toward the primary aim of the association—to further the cause of highway construction in this country—and particularly the present highway program. On the program were five speakers from various interested bodies.

The new officers elected at this meeting were: president, Paul W. Seitz (May Sand & Gravel Corp.); first vice-president, Thomas E. Lalley (Bradford Hills Quarry); regional vice-presidents, Thomas B. Stafford (Vermont Marble Co.), D. L. McCullough (Alabama Aggregates Co.), E. B. Snead (Texas Crushed Stone Co.); and secretary-treasurer, Taisto Laine (Hanna Coal Co.).

In his opening address, Robert M. Koch, executive vice-president of N.C.L.I., said that this group intends to continue its efforts to help along the primary and secondary highway programs, especially with respect to preventing bottlenecks. Steps will also be taken to expand the membership of the association in order to make its efforts more effective.

Paul W. Seitz, newly-elected president, stated that one of the things that needs to be done is to educate the public on limited access and bypasses. It is up to producers to attend all hearings in their areas to insure on the part of local residents a realization that these items will do the community and individuals enough good to far outweigh any temporary discomforts or inconveniences. He advocated showing movies to help this effort.

Mr. Seitz also warned producers about zoning and mentioned as a possible future problem new blasting codes such as the one put into effect in Pennsylvania,* known as Legislative Act 362, effective September 1, 1957. It was pointed out that in Tennessee producers must get state approval to do blasting. In Wisconsin everyone handling explosives must be licensed. Insurance companies there can also demand that a vibration measurement instrument be on hand for every blast.

T. C. Adams, Cedar Bluff Stone Co., Inc., and Director J. F. Pace, J. F. Pace Construction Co.

Mr. Seitz also mentioned that it is becoming more important to figure salvage value of equipment properly. In straight-line depreciation, the salvage value is set when the equipment is purchased, and it is depreciated accordingly. If no value is set, the government does it, and the figure is usually to the producer's disadvantage.

Highway Engineers Two important movies were shown which are being used to help the highway program. They were also the subject of an address by General Louis W. Prentiss, executive vice-president of A.R.B.A. The first film, *We'll Take the High Road,* is used to soften up areas ahead of highway hearings. It shows how nearly every objection to freeways can be overcome. It is also aimed to help recruit top-flight men to become engineers. The second film, *Engineering, Your Future,* is designed to clear up much of the prevailing misinformation about the work of a highway engineer. This movie is being shown in high schools and colleges to interest students in such work.

Highway Fund Raids It was pointed out by Herschel Newsom, master, National Grange, that one of the major threats to the highway program lies in efforts to raid the trust fund. He mentioned some of these efforts made by utilities, transit authorities,

Samuel Kraus Sr. and Director E. M. Markwell, both of the Auxvasse Stone & Gravel Co.

* See PIT AND QUARRY October, 1957, p. 37.

etc. He also warned against efforts to divert state and other local funds under the pretext that federal funds are available. Mr. Newsom said the increasing cost of road work is another threat. He is in favor of making more money available rather than extending the program.

Highway Aggregate Requirements An accurate picture of the highway program from the aggregate producer's viewpoint was given by M. B. Christensen, chief, Construction and Maintenance Division, Bureau of Public Roads. He pointed out that the early stages of the program do not involve materials; these are required only in the final stages of actual physical construction and maintenance. The 13-year program will have $27.8 billion available of federal and state-matching funds plus $850 million in federal funds for the 1957, 1958, and 1959 fiscal years, to be matched with an equal amount of state funds for the regular Federal-Aid program. At this rate about $50 billion will be spent in the 13-year period, or about $4 billion per year.

Total actual highway construction costs will take about $43½ billion of this total, and about $20½ billion of this will go for materials. About $6½ billion of the money for materials will be spent for crushed stone and other aggregates, of which about 4½ billion tons will be required. According to Mr. Christensen, in the past about 42 percent of the aggregates have been procured from commercial sources, and 58 percent have been job-produced from local pits and quarries by highway construction contractors. There is, he said, no way of knowing how much of the total aggregate requirements will be crushed stone, but it is included in practically all specifications. Its use will depend on its availability in an area, its suitability, and its competitive standing.

According to Mr. Christensen, because of the possibility that the supply of aggregates in some areas may be inadequate, the bureau recently requested its field offices and the state highway departments to investigate and report upon the situation in each state. In those states where shortages might occur, efforts will be made to find new sources. So far, he said, only a few states have reported concern over supplies of aggregates and these express willingness to co-operate in any such surveys.

Mr. Christensen also stated that every effort is being made to see that small business enterprises are given ample opportunity to participate in this interstate highway work. The materials used are procured or produced by the construction contractors, who are free to choose the sources as long as the materials meet the specifications. For the larger contracts the contractors may find it more economical to open up their own sources of aggregates, but large or small producers who are prepared to do so will have a good chance to supply these, as well as the smaller contracts. In the ABC program, which is about equal in size to the interstate program, however, the work is such that projects will be small and medium-sized and well distributed throughout each state.

Another factor to be considered is the volume of new construction work that will automatically be generated in the immediate vicinity of the interstate highways. This will involve, said Mr. Christensen, not only new connecting and other roads, but also residential sub-divisions, industrial plants, etc. Small producers will also be able to participate extensively in this work. In addition, he pointed out, agricultural limestone is also used in highway work, and this will be even more the case in the beautification of these highways.

Highway Safety James L. Shotwell, Bureau of Public Roads, tied in his talk with a movie, *We'll Take the High Road,* which had been shown earlier. He stressed the fact that the highways in this program are being designed for maximum safety, and a rate of about one-half of the usual is expected. A recent study showed that with 4-lane divided highways where there was no control of access, the cost of accidents per year per mile was $82,000. With controlled access, the cost was only $19,000.

American Aggregates

(*From page* 114)

crushed gravel screen, the lower deck is primarily for dewatering.

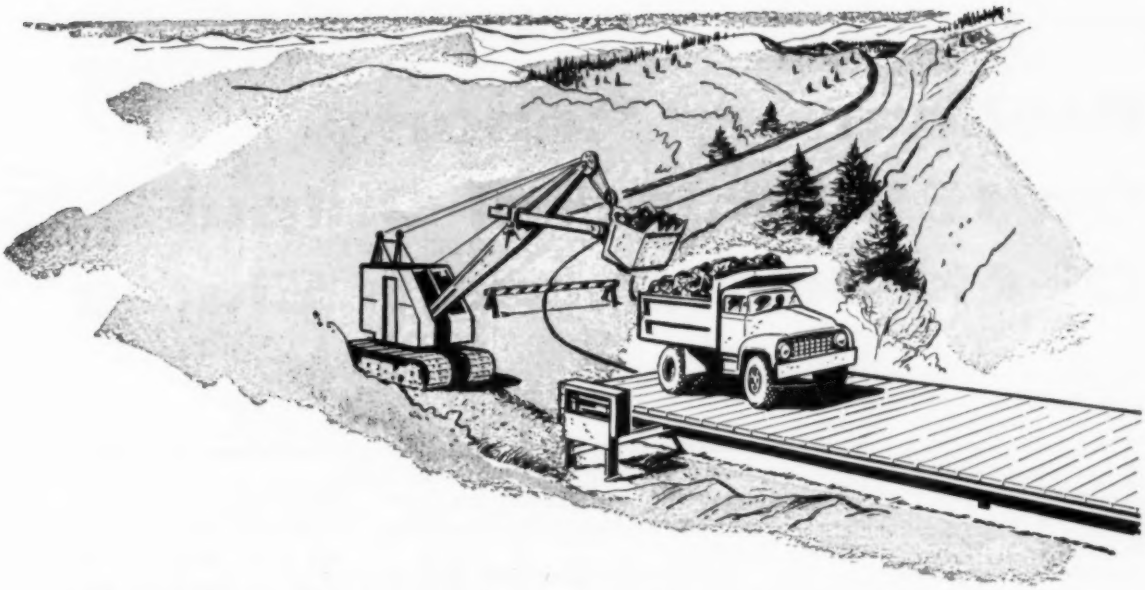
Chuted to the appropriate underlying bin, the various fractions of uncrushed and crushed washed materials may be loaded into trucks or chuted through manually operated gates to a 24-in. by 117-ft. inclined belt conveyor, on which they are carried to the first of three stockpiling towers.

Each 44-ft. tower supports a 24-in. by 44-ft. stockpiling boom conveyor. A gear-motor-driven turn head supplies material to opposing conveyors on each of the first two towers, and three on the third. From a single control panel an operator can position each turn head in the subsequent flow line to deliver a particular fraction to its appropriate boom stockpiling conveyor.

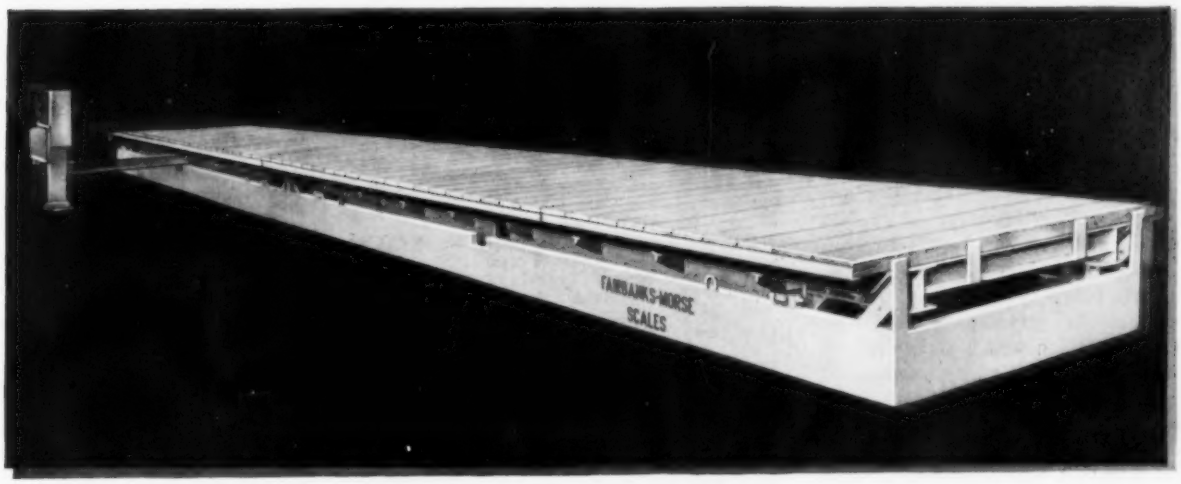
On one side of the towers, the crushed material is stored for recovery by wheel loaders and clamshell cranes, while on the round gravel side the finished products are stockpiled over a 425-ft. reinforced concrete reclaiming tunnel 6½ by 6½ ft. in cross section. This tunnel houses a 30-in. by 550-ft. reclaiming conveyor belt, which is also used to recover from sand piles. From the mouth of the tunnel the reclaiming conveyor travels up to the top of a four-compartment, 200-ton capacity truck loading bin tower. Here the finished products are discharged on a 5- by 10-ft. Allis-Chalmers double-deck Ripl-Flo. Finished products are rinsed on a ½-in. opening top deck and a $\frac{3}{16}$-in. opening bottom deck.

Trucks loaded from these bins, as well as from stockpile, or the intermediate bins, are weighed out over a 50-ton Fairbanks-Morse truck scale. From this plant shipments are made in a 20-mi. radius.

Under the direction of M. R. Maxwell, superintendent, the plant is operated on one daily shift by a 17-man crew. In addition to concrete and mason sands, the plant produces three sizes of round aggregates, dust, three dust-filled fractions, and three types of asphalt aggregates. Both the new facility and older northside plant are operated under the supervision of W. C. Hineman, Dayton manager for American Aggregates Corp.



Weigh it at the job site



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Preliminary Reports On 1957 Mineral Output Of Alaska, Western States

THE following reports on 1957 mineral production (by states) in all cases show preliminary figures. Sources include the U. S. Bureau of Mines; the individual state divisions, departments, or bureaus of mines; and state geological and mineralogical surveys.

Idaho Value of mineral production in Idaho declined about 2 percent, from $75,200,000 in 1956 to $73,400,000 in 1957, according to preliminary data.

Output of marketable phosphate rock decreased about 3 percent, compared with 1956, moderately reversing the upward trend of phosphate rock production established during the previous four years.

Pumice production dropped moderately below the level of 1956, according to preliminary estimates. Output, which was from operations in Bonneville County, was used primarily in production of lightweight concrete aggregate.

Production of sand and gravel for all purposes was estimated to have decreased somewhat from the 7,900,000-million ton level of 1956. A general decrease in construction activity in the state during 1957 was expected to be reflected in the decreased usage of this commodity.

Gross output of stone was expected to decline from the 1,800,000 ton level of the previous year, owing principally to generally decreased construction activity during the year.

Alaska The total volume of mineral production in Alaska in 1957 increased approximately $1,500,000 over 1956, according to estimates of production compiled by the U. S. Bureau of Mines. Increased mercury output and coal production, as well as substantial shipments of uranium ore, were mainly responsible for the higher value.

Gold remained in first place as the leading commodity, in terms of value, produced by the Alaskan mineral industries. Coal was second in total value, and sand and gravel ranked third.

Estimates of the value of sand and gravel and stone production indicated a decrease of approximately $1,105,000, compared with 1956. Delays caused by the change-over

Mineral Production in Idaho 1956-57[1]

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957 Short Tons (unless otherwise stated)	1957 Value
Antimony (content of concentrate)—gross weight	549	[3]	661	[3]
Cobalt (content of concentrate) lb.	2,385,013	[3]	2,600,000	[3]
Columbium-tantalum (oxide content of concentrate)—lb.	215,900	[3]	350,000	[3]
Copper (recoverable content of ores, etc.)	6,656	$ 5,657,600	7,555	$ 4,533,000
Gold (recoverable content of ores, etc.)—fine ounces	49,210	[4]322,350	11,850	414,750
Iron ore (usable)—long ton, gross weight	800	[3]	[3]	[3]
Lead (recoverable content of ores, etc.)	64,321	20,196,794	70,225	20,224,800
Mercury—76-lb. flasks	3,394	882,168	2,200	543,400
Nickel (content of concentrate)—lb.	98,495	[3]	100,000	[3]
Phosphate rock—long tons	1,438,151	6,539,436	1,400,000	6,560,000
Pumice and pumicite	101,913	206,064	[3]	[3]
Rare earth metals concentrate	303	[3]	[3]	[3]
Sand and gravel	7,874,460	5,661,417	7,500,000	5,500,000
Silver (recoverable content of ores, etc.)—fine ounces	13,471,916	12,192,764	15,148,900	13,710,520
Stone	1,791,077	2,752,148	1,700,000	2,700,000
Thorium concentrate	26	[3]	[3]	[3]
Titanium concentrate—gross weight	48,619	[3]	28,400	[3]
Tungsten (recoverable content of ores, etc.)—60 percent WO_3 basis	582	[3]	38	[3]
Zinc (recoverable content of ores, etc.)	49,561	13,579,714	58,642	13,487,660
Value of items that cannot be disclosed: barite, cement, clays, abrasive garnet, gem stones, mica (1957) and values indicated by footnote 3. Excludes value of limestone used in cement		7,161,262		5,712,427
Total		[4]75,152,000		73,387,000

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers)
[2] Preliminary figures
[3] Figure withheld to avoid disclosures of individual company confidential data
[4] Revised figure

Mineral Production in Alaska, 1956-57[1]

Mineral	1956		1957	
	Short Tons (unless otherwise stated)	Value	Short Tons (unless otherwise stated)	Value
Antimony ore—gross weight	[2]	[2]	31	$ 5,600
Chromite—gross weight	7,193	$ 711,481	4,200	427,000
Coal, bituminous	726,801	6,373,976	825,000	[3]
Gold (recoverable content of ores, etc.) troy ounces	209,296	7,325,360	210,000	7,350,000
Lead (recoverable content of ores, etc.)	1	314	1	268
Mercury—76-lb. flasks	3,280	852,539	5,300	1,309,100
Sand and gravel	5,955,105	5,879,799	4,600,000	5,000,000
Silver (recoverable content of ores, etc.)—troy ounces	28,360	25,667	26,000	23,500
Stone	194,864	594,894	120,000	370,000
Value of items that cannot be disclosed: gem stones, platinum-group metals, uranium ore, and values indicated by footnotes 2 and 3		1,643,937		10,435,250
Total		23,408,000		24,921,000

[1] Production as measured by mine shipments or marketable production (including consumption by producers)
[2] Figure withheld to avoid disclosure of individual company confidential data
[3] Included with "Items that cannot be disclosed"

Mineral Production in Montana 1956-57[1]

Mineral	1956		1957[2]	
	Short Tons (unless otherwise stated)	Value	Short Tons (unless otherwise stated)	Value
Chromite concentrate—gross weight	118,780	$ 3,806,926	119,371	$ 3,819,872
Coal (bituminous and lignite)	846,134	3,468,246	375,000	[3]
Copper (recoverable content of ores, etc.)	96,426	81,962,100	90,896	54,537,600
Fluorspar	59,775	[3]	[3]	[3]
Gold (recoverable content of ores, etc.)—troy ounces	38,121	1,334,235	27,910	976,850
Iron ore (usable)—long tons, gross weight	13,040	[3]	[3]	[3]
Lead (recoverable content of ores, etc.)	18,642	5,853,588	13,328	3,838,464
Manganese ore and conc. (35 percent or more Mn)—gross weight	80,553	[3]	[3]	[3]
Manganiferous ore and conc. (5-35 percent Mn)[4]—gross weight	4,752	[3]	4,536	[3]
Natural gas—million cu. ft.	25,847	1,758,000	30,700	2,100,000
Petroleum (crude)—thousand 42-gal. bbl.	21,760	56,141,000	27,100	69,900,000
Phosphate rock—long tons	557,479	3,956,673	574,000	4,100,000
Sand and gravel	10,024,370	7,173,810	9,500,000	7,100,000
Silver (recoverable content of ores, etc.)—troy ounces	7,385,908	6,684,620	5,114,050	4,628,474
Stone	1,247,385	1,815,648	1,300,000	1,800,000
Tungsten (recoverable content of ores, etc.)—60 percent WO_3 basis	1,230	[3]	[3]	[3]
Zinc (recoverable content of ores, etc.)	70,520	19,322,480	49,790	11,451,700
Value of items that cannot be disclosed: barite, cement, clay, gem stones, gypsum, lime, mica (1956), natural-gas liquids, pumice and pumicite, pyrites, sulfur, talc, uranium, vermiculite, and values indicated by footnote 3		21,356,973		20,601,153
Total		[5]213,728,000		[5]184,000,000

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers)
[2] Preliminary figures
[3] Figure withheld to avoid disclosure of individual company confidential data
[4] Production figures on manganiferous ores (less than 35 percent) mined and shipped to government stockpile depots not included in state totals (see text; section on manganese)
[5] Total has been adjusted to eliminate duplication in the value of stone

from the Alaska Road Commission to the Bureau of Public Roads, and inability to obtain property easements required for several road building projects were the principal reasons for the decline.

Montana Montana mineral production dipped $30,000,000 (14 percent) from the record total of 1956, according to preliminary data. The state total dropped from $213,700,000 in 1956 to $184,000,000 in 1957, mainly as the result of metal-mining closures and cutbacks in Silver Bow County to adjust to depressed markets.

Total value of nonmetals, including sand and gravel, stone and phosphate rock, cement, clays, gypsum, lime, pumice and pumicite, sulphur, and talc, was estimated to be about the same as in 1956.

Cement production decreased about 11 percent, compared with 1956. This reversed the upward trend begun four years ago.

There was an increase in fluorspar output. In addition, plans were announced for the construction of a beneficiation plant near Darby that would be ready for operation late in 1957.

Production of gypsum dipped 15 percent below the 1956 level, while a substantial increase (30 percent) was recorded in output of lime, compared with 1956.

Estimated output of marketable phosphate rock reached 574,000 tons, valued at $4,100,000, compared with 557,479 tons worth $3,900,000 in 1956.

Both quantity and value of sand and gravel produced during 1957 were estimated at slightly below the 1956 level. Output of stone was estimated above the 1956 mark. Continued heavy construction requirements sustained the demand for crushed stone.

Oregon Mineral output in Oregon again increased in 1957, according to preliminary data; total value of all minerals produced rose from $34,000,000 to $37,600,000 (11 percent). Mercury, cement, sand and gravel, stone, and particularly nickel recorded notable advances, while the value of chromite credited receded sharply to a mere normal level, owing to the completion in 1956 of work on government stockpiled material.

Production of pumice decreased substantially, compared with 1956, according to preliminary estimates. Pumice produced in the state was used principally for lightweight concrete aggregate. Minor quantities were used for abrasives and other miscellaneous purposes. A quantity of volcanic cinders for road and ballast purposes also was produced.

According to available information, sand and gravel output increased somewhat over the 1956 level of 11,600,000 tons. Greater use of these commodities was reported for the road construction program of the Oregon State Highway Department during 1957.

Output of stone for all purposes was estimated to have increased slightly over the level of 1956, owing principally to increased use of crushed stone for road construction for the Oregon State Highway Department. Crushed stone for road construction in 1956 accounted for 69 percent of the total production of stone in the state.

Mineral Production in Oregon 1956-57[1]

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957[2] Short Tons (unless otherwise stated)	1957[2] Value
Chromite—gross weight	54,577	$ 2,001,083	7,800	$ 670,800
Clays	256,942	278,205	235,000	260,000
Copper (recoverable content of ores, etc.)	7	5,950	8	5,040
Gold (recoverable content of ores, etc.)—fine ounces	2,738	95,830	[3]	[3]
Iron ore (limonite)	1,000	[3]	[3]	[3]
Lead (recoverable content of ores, etc.)	5	1,570	[3]	[3]
Mercury—76-lb. flasks	1,893	492,029	3,870	955,890
Nickel ore—nickel content	6,866	[3]	15,000	[3]
Sand and gravel	11,637,183	11,646,367	12,000,000	12,000,000
Silver (recoverable content of ores, etc.)—fine ounces	13,542	12,256	[3]	[3]
Stone	6,097,965	7,890,197	6,500,000	8,200,000
Value of items that cannot be disclosed: carbon dioxide, cement, diatomite, gem stones, mineral pigments, natural sodium carbonates (1956), pumice and pumicite, tungsten, uranium, and values indicated by footnote 3		12,929,235		16,889,829
Total		[4]34,011,000		[4]37,582,000

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers)

[2] Preliminary figures

[3] Figure withheld to avoid disclosure of individual company confidential data

[4] Total adjusted to eliminate duplication in the value of clays and stone

Washington Value of Washington mineral production dropped from $61,600,000 in 1956 to $57,200,000 in 1957, according to preliminary data. Mine output of copper and zinc was down $1,500,000 and $1,700,000, respectively as the result of mine closures; cement production was 15 percent below the 1956 level because of strikes; and coal production continued to decline due to loss of markets. Tonnage and value of sand and gravel, stone, and magnesite were estimated to be slightly higher than in 1956.

Continued activity at various dam sites under construction, as well as several starts, plus the increased tempo of the highway-building program indicated that sand and gravel production would be slightly higher than the 1956 total of 16,800,000 tons, valued at $15,000,000.

Large quantities of low-grade fill material are used in construction of earth-fill dams. Several such dams were under construction in the state during 1957, and any unusually large tonnages used at such projects would result in an appreciable increase in the total sand and gravel produced.

Preliminary estimates indicated that the upward trend in stone pro-

Mineral Production in Washington, 1956-57[1]

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957[2] Short Tons (unless otherwise stated)	1957[2] Value
Clay	319,988	$ 439,461	320,000	$ 450,000
Coal	472,620	3,432,127	365,000	[3]
Copper (recoverable content of ores, etc.)	2,926	2,487,100	1,660	996,000
Chromite—gross weight	30	3,330	—	—
Gold (recoverable content of ores, etc.)—fine ounces	70,669	2,473,415	[3]	[3]
Iron ore, usable (hematite)—long tons, gross weight	2,201	[3]	1,934	[3]
Lead (recoverable content of ores, etc.)	11,657	3,660,298	12,342	3,554,496
Peat	37,043	128,964	37,000	129,000
Pumice and pumicite	5,291	14,757	[3]	[3]
Sand and gravel	16,841,792	15,037,128	17,000,000	15,500,000
Silver (recoverable content of ores, etc.)—fine ounces	448,442	405,863	[3]	[3]
Stone	8,057,338	11,659,598	9,000,000	12,000,000
Zinc (recoverable content of ores, etc.)	25,609	7,016,866	23,139	5,321,970
Value of items that cannot be disclosed: abrasive stone (1956), carbon dioxide, cement, diatomite, epsomite, gem stones, gypsum, lime (1956), magnesite, mercury (1957), olivine, strontium, talc and soapstone, tungsten, uranium, and values indicated by footnote 3		17,707,142		21,630,421
Total		[4]61,619,000		[4]57,192,000

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers)

[2] Preliminary figure

[3] Figure withheld to avoid disclosure of individual company confidential data

[4] Total adjusted to eliminate duplication in the value of clays and stone

duction, mainly for use at dam sites and for highway construction, continued in 1957. Output increased to about 9,000,000 tons, valued at $12,000,000 compared with 8,100,000 tons, valued at $11,700,000, in 1956.

California The value of California's mineral production in 1957 rose to a new high, estimated at $1,631,405,500, compared to the peak of $1,555,267,000 in 1956. This increase was attributed to the advance in the average unit price for crude petroleum, despite a drop in the volume of oil produced.

The total value of production in the field of nonmetallic minerals decreased about 8 percent, or $30,000,000 below 1956 figures. Materials of construction, particularly sand and gravel, cement and stone, had the greater decrease in production, and corresponding value declines. The notable exceptions were sulphur ore, pyrite, and lime, which experienced marked advances, while those materials with moderate increases included clays, salt, and bromine.

Based on the figures available at the year-end, plus the estimates of output furnished by the principal producers of these materials, the combined value of California's 1957 production of cement, sand and gravel, and stone was $234,000,000, roughly two-thirds the value of all nonmetallic minerals produced. The 1957 value of each of these items was less than in 1956. Cement was down 11 percent, sand and gravel 15 percent, and stone 5 percent. This situation reflected the levelling off of building activity in the state. Although overall tonnages of sand, gravel and stone were lower, production for highway construction was considerably higher than in 1956.

The output of burned lime and hydrate for 1957 was estimated as 11 percent higher than in 1956, a year in which nearly two-thirds of the output was consumed by the chemical industries, 30 percent in the manufacture of refractories, with minor quantities utilized by the building trades and used as a soil aid.

The production of diatomite in 1957 was up, compared to 1956. Nearly 60 percent of the California production was used as a filter aid, with smaller quantities used for fillers and in pozzolan cement.

The value of industrial sands, produced for glass, molding, blast, furnace, engine, and filter uses, increased about 6 percent in 1957.

The production of pumice, pumicite, and volcanic cinder was estimated at about the same as in 1956. Talc, soapstone and pyrophyllite production was estimated at slightly less than in 1956.

Mineral Production in California, 1956 and 1957 (estimate)[1]

Mineral	1956 Short Tons (unless otherwise stated)	1956 Value	1957 (estimate) Short Tons (unless otherwise stated)	1957 (estimate) Value
Boron minerals (B_2O_3 content)	315,047	$ 39,591,953	308,000	$ 38,706,000
Cement—376-pound bbls.	39,289,586	120,511,049	35,000,000	107,450,000
Chromite—gross weight	27,082	2,191,956	32,000	2,592,000
Clays	2,981,595	6,137,517	3,100,000	6,200,000
Coal (lignite)	[4]	[4]	[4]	[4]
Copper (recoverable content of ores, etc.)	859	730,150	830	498,000
Gem stones	[3]	90,000	[3]	90,000
Gold (recoverable content of ores, etc.)—fine ounces	193,816	6,783,560	166,700	5,834,500
Gypsum	1,399,390	3,401,606	1,349,000	3,278,000
Iron ore (usable)—long tons, gross weight	2,414,277	[4]	2,470,000	[4]
Lead (recoverable content of ores, etc.)	9,296	2,918,944	3,640	1,048,300
Lime (open-market)	302,479	5,077,951	336,000	5,641,000
Magnesium compounds from sea water and bitterns (partly estimated) MgO equivalent	66,007	4,531,777	65,000	4,463,000
Manganese ore (35 percent or more Mn)—gross weight[5]	6,595	595,001	14,300	1,287,000
Mercury—76-lb. flasks	9,017	2,343,699	14,250	3,520,000
Natural gas (marketed production)—1,000,000 cu. ft.	504,458	113,503,000	475,000	118,750,000
Natural-gas liquids:				
Natural gasoline and cycle products—1,000 gal.	876,902	84,615,000	1,211,000	100,495,000
LP-gases—1,000 gal.	410,232	21,332,000		
Peat	18,918	214,735	24,000	272,400
Perlite	15,119	134,861	15,200	135,500
Petroleum (crude)—1,000 42-gal. bbls.	350,754	918,975,000	339,000	1,036,000,000
Pumice, pumicite and volcanic cinder	634,356	2,333,809	600,000	2,208,000
Salt (common)	1,444,211	7,605,764	1,480,000	7,800,000
Sand and gravel	86,525,955	96,776,212	71,000,000	83,000,000
Silver (recoverable content of ores, etc.)—fine ounces	938,139	849,063	515,000	466,100
Stone	32,583,370	46,108,652	29,500,000	43,900,000
Strontium minerals	[4]	[4]	—	—
Sulphur ore—long tons	[4]	[4]	[4]	[4]
Talc, pyrophyllite and soapstone	153,710	1,419,227	146,000	1,347,000
Tungsten concentrate—60 percent WO_3 basis	3,719	13,449,378	2,700	3,463,000
Zinc (recoverable content of ores, etc.)	8,049	2,205,426	2,980	685,400
Value of items that cannot be disclosed	—	69,149,775	—	68,830,300
Total California[5]	—	$1,555,267,384	—[5]	$1,631,405,500

[1] Production as measured by mine shipments, sales, or marketable production (including consumption by producers); uranium data is reported on a fiscal year basis; lithium excluded
[2] Final figure, superseding preliminary figure
[3] Weight not recorded
[4] Figure withheld to avoid disclosure of company confidential data
[5] Total adjusted to eliminate duplication in the value of clays and stone included in cement and lime

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PHIL BIGHAM
County Engineer
Barton County, Kansas

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	2	——	391	324	254
	3	——	366	311	259
	4	——	358	288	285
Loading Trucks from Windrows... Tons per Hour	5	150 ft.	327	192	207
	6	150 ft.	313	192	178
	7	100 ft.	390	262	240
	8	100 ft.	394	274	253
Overall Average...Tons per Hour			**371**	**267**	**237**

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attention focused on

Cement, Lightweight Aggregates, Gravel

at A.I.M.E. Meeting in New York

Dr. Augustus B. Kinzel (Union Carbide Corp.) new president of A.I.M.E.

Grover J. Holt (Cleveland-Cliffs Iron Co.), retiring president of A.I.M.E.

THE annual meeting of the American Institute of Mining, Metallurgical, and Petroleum Engineers was held in New York City, February 16-20, 1958. Technical sessions were held in the Statler and Sheraton-McAlpin hotels.

At the annual banquet, held in the Waldorf-Astoria Hotel, the new president, Augustus B. Kinzel, world - renowned metallurgist and vice-president of Union Carbide Corporation, was introduced by President Grover J. Holt. A reception was held for him after the banquet. Distinguished awards of the engineering profession were made to a number of members; and honorary membership in A.I.M.E., the highest distinction in the institute, was conferred on three eminent engineers — Dr. C. H. Mathewson of Yale University; Dr. D. H.

McLaughlin, president Homestake Mining Co.; and Fred Searls Jr., chairman of Newmont Mining Co. With an attendance of more than 2,500, the seating capacity of the Waldorf - Astoria grand ballroom was exceeded, and for the first time in A.I.M.E. history many had to view the proceedings by closed circuit television from other banquet rooms in the hotel.

Worthy of note was the presence at the meeting of 14 past-presidents of A.I.M.E., headed by the senior past-president, Herbert Hoover.

An announcement of particular interest to those working in the field of industrial minerals was that J. L. Gillson (Dupont Company), a vice-president of the institute and long prominent in the Industrial Minerals Division, is president-elect of A.I.M.E. for 1959-60. Dr. R. M. Grogan, (Dupont Co.), is the new chairman of the Industrial Minerals Division, succeeding T. L. Kesler (Foote Mineral Co.).

Dr. J. L. Gillson (E. I. du Pont de Nemours & Co.), president elect of A.I.M.E. for 1959-60.

Dr. R. M. Grogan (E. I. du Pont de Nemours & Co.), new chairman of the Industrial Minerals Division.

Hardinge Award Announcement was also made of a new institute honor—The Hal Williams Hardinge Award. The latter, made possible through the generosity of the widow of Mr. Hardinge, is given to recognize outstanding achievement in the field of industrial minerals. It consists of an embossed plaque on which is to be engraved the name of the recipient, a citation of the particular achievement for which the award is conferred, and the date. The award will be made from time to time on authorization of the board of directors of the institute, acting upon the recommendation of The Hal Williams Hardinge Committee of Award. The presentation of this award will be made preferably at an annual meeting of the institute, or of the Society of Mining Engineers of A.I.M.E. There are no limitations regarding nationality or membership in the institute, but the person must be living at the time his name is presented to the chairman of the Committee of Award.

It was also announced that the next annual meeting of A.I.M.E. will be held in San Francisco, February 15—19, 1959.

Of the several hundred papers presented at the technical sessions many were of interest to readers of PIT AND QUARRY. Space does not permit summaries of all of these, but digests of some presented at sessions of the Industrial Minerals Division follow.

Beneficiation W. L. Price, engineering manager, Keystone Division, Dravo Corporation, in his paper, *Current Developments in Gravel Beneficiation,* cited United States Bureau of Mines statistics showing that the sand and gravel industry, with a yearly production of over 500,000,000 tons, is now producing a greater tonnage of material than any other single unit of the mining industry of the United States. He reviewed the progress in beneficiation of gravel during the last ten years and described the four processes now in use: (1) heavy - media separation; (2) jigging; (3) rising current classification; and (4) elastic fractionation. Of these, the first three had been developed fully in coal cleaning and then adapted to gravel, but the fourth was developed solely for gravel and depends on the rounded particle shape of gravel for its effectiveness.

Heavy-media separation was first used for beneficiating gravel by engineers of the Royal Canadian Air Force at Rivers, Manitoba, in 1948. Having need of a high-grade aggregate for the construction of a concrete runway, and finding only gravel containing from 2 to 10 percent of soft shale within economic hauling distance, the engineers undertook a study of methods for removing the shale on the basis of a difference in specific gravity. The specific gravity of the shale was 2.0 and that of the desirable constituents of the gravel averaged 2.6 Pilot plant tests based on heavy-media separation proved successful, and a full - scale plant was erected and operated for the life of the project. In 1952, after three years of experimentation, Dravo Corporation placed in operation a large heavy media separation plant to beneficiate Ohio River gravel. This project was followed by other producers, and since that time nine heavy-media separation plants have been built to improve the quality of gravel.

In a search for cheaper methods of beneficiating gravel the use of jigs was investigated. In 1954 the McGrath Sand and Gravel Company, Chillicothe, Ill., installed the first Remer jig. Later the Baum air-operated jig was used, and 21 plants now use jigs in beneficiating gravel. Comparisons between heavy-media separation equipment and jigs are difficult; but, in general, the heavy-media separation process requires a much higher initial investment than

J. Richard Tonry (Portland Cement Association) described several methods for the removal of heat in cement grinding.

does the jigging process, and the operating costs of heavy-media separation range between 15 and 20 cents per ton as against 5 and 10 cents per ton for jigs. However, a number of other factors enter into the situation, including the size range of the gravel particles.

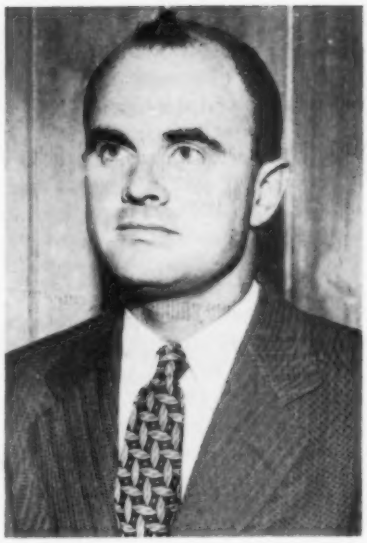
The hydraulic rising current classifier is based on coal-cleaning equipment. One unit—the Belknap Gravel Washer—is in operation at an Ohio River plant treating up to 150 tons per hour of gravel. To wash the light material out of the gravel, water is circulated continuously at 1,500 to 1,700 g.p.m. through the vertical throat to lift the light shaly material and coal from the gravel. The gravel sinks down the throat to a submerged bucket elevator. About 100 gallons per minute of make-up water is needed to counteract losses. The unit appears to be doing an excellent job, and maintenance is low, but no test data are available as yet on the process. However, additional installations are being planned.

The elastic fractionation process of beneficiating gravel was developed by E. H. Leslie of Ann Arbor, Mich. This method removes soft, deleterious matter from gravel by bouncing the particles off an inclined steel plate. The particles bouncing the least distance and dropping into the first compartment represent the poorest material. The material bouncing the farthest into the third compartment is the improved product. Gravel bouncing into the second compartment is a middling product that is re-circulated. To process gravel on a production basis, it is essential that the feed be narrowed down to a ribbon one particle in thickness. One plant is using this process on a commercial scale.

In his paper, *The Application of a Jig for the Benefication of Sand and Gravel,* John Meckenstock of Meckum Engineering, Inc., Ottawa, Ill., described the Meckum jig and its operation in sand and gravel cleaning. He stated that generally the amount of deleterious material to be removed from sand and gravel is from 3 to 8 percent, and the jig usually can remove 90 percent of this.

It can remove higher percentages, but the efficiency may drop. Operations in New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Minnesota, and Iowa have shown that cost of jigging is about 5 cents per ton of sand and gravel treated. These costs include labor, power, repairs, depreciation, and overhead. In conclusion, Mr. Meckum said that the jig has a low initial and operating cost, but it may show some peculiarities which the operator must learn.

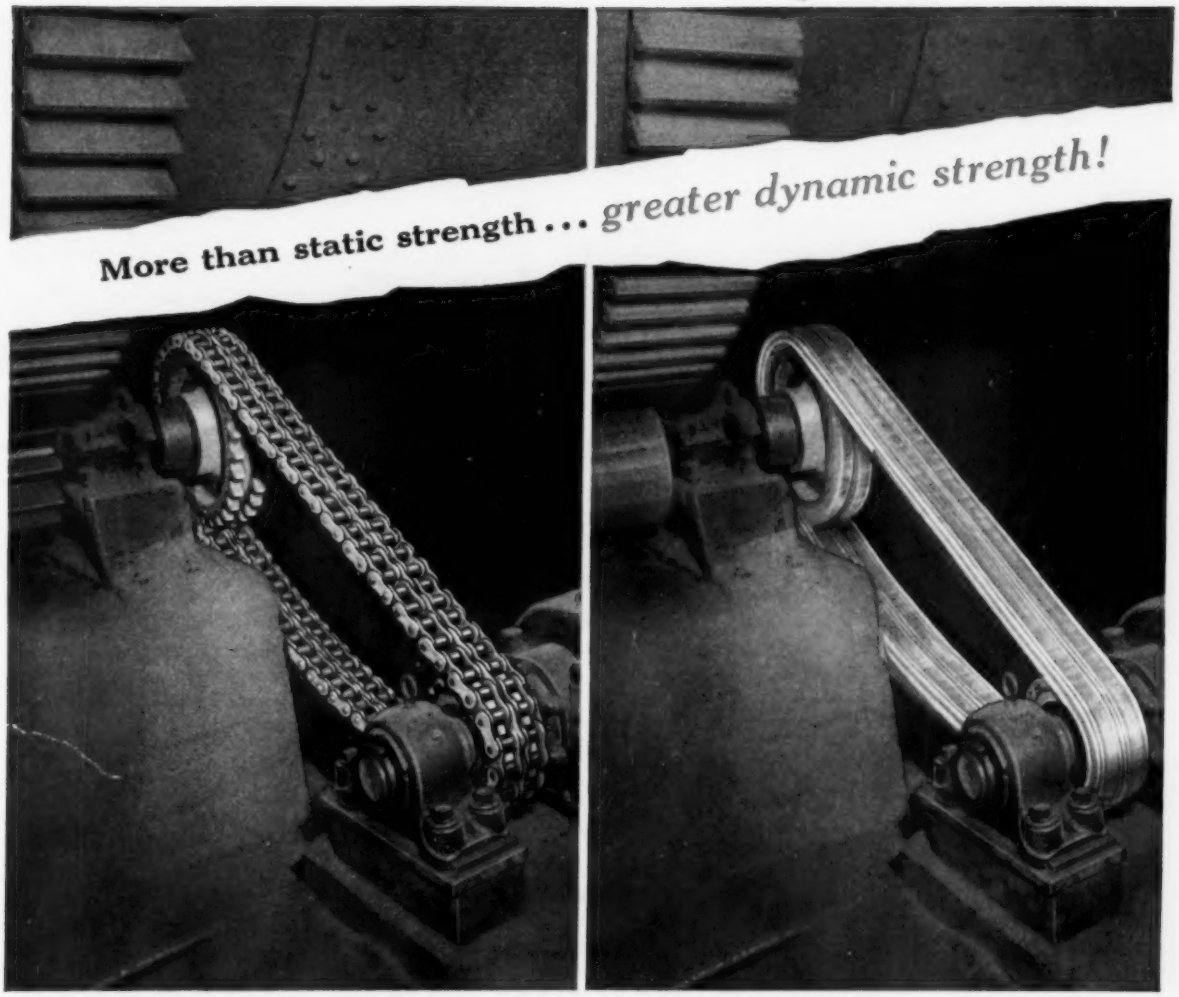
Thomas L. Kesler (Foote Mineral Co.), retiring chairman of the Industrial Minerals Division.



Thomas M. Ware (International Minerals & Chemical Corp.), guest speaker at the Industrial Minerals Division luncheon.

Titanium Minerals J. L. Gillson, in his paper on *Sand Deposits of Titanium Minerals,* dealt with the world situation respecting these deposits, which in geological age range from Cretaceous to recent. They are of fluvial and marine origin; and some deposits, representing ancient ocean beaches, are 275 ft. above the present sea level. These sand deposits are of major commercial importance because the titanium mineral recovered is of high quality. They are easily worked, and most of them are accessible to transportation. Deposits on the beaches of the Malabar Coast in India were the main source of supply for the manufacture of titanium oxide pigment in the United States from 1928 until World War II, when shipping difficulties led to the development of the low-grade sand deposits in Florida containing only about 1.2 percent of TiO_2. The Florida deposits now supply most of the domestic demand. Recently the discovery of fossil placer deposits in New Jersey and Tennessee has added greatly to the reserves of sand deposits of titanium minerals; and the development of the Humphrey's spiral concentrator has made possible the profitable working of very low-grade deposits.

(*Continued on page* 152)



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Courtesy of Photograph Survey Corp., Ltd., Toronto, Canada

The new plant of the St. Lawrence Cement Co. at Clarkson, Ont. This facility, originally a 1,500,000-bbl. one-kiln operation, went into production in 1956; doubling of capacity to 3,000,000 bbl. was completed in 1957.

Canadian Cement Review and Forecast

By WALTER E. TRAUFFER

new records set... 1958 outlook fair

AGAIN in 1957 the Canadian portland cement industry set new all-time records in production and shipments, this time by a wide margin, but present indications are that 1958 may not reach that level. The new plant and expansion programs completed in 1957 again were more than adequate to take care of the increased demand. This is evident in the fact that stocks at plants and warehouses at the end of the year were far above those of a year earlier. Only one new plant was completed in 1957, but there were several large expansion programs. To the best of our knowledge, two new plants are scheduled for completion in 1958, but there are no large expansion programs.

According to preliminary government figures, the total production of portland cement in Canada in 1957 was 6,248,718 short tons (2,000 lb.) an increase of 22 percent over the 1956 total of 5,107,-874 tons. Shipments to customers (plus a small amount used at plants) totalled 6,066,381 tons, an increase of 21 percent over the 5,-021,683 tons total of 1956. Stocks at plants and warehouses were 457,-904 tons, as compared to 281,781 tons in 1956. The value of shipments was up 24 percent, from $75,233,321 in 1956 to $93,764,-545 in 1957.

Exports were up considerably in

The new 1,500,000-bbl. plant of Lafarge Cement of North America Ltd. at Lulu Island, B. C., which recently went into operation. Limestone is obtained from a quarry on Texada Island.

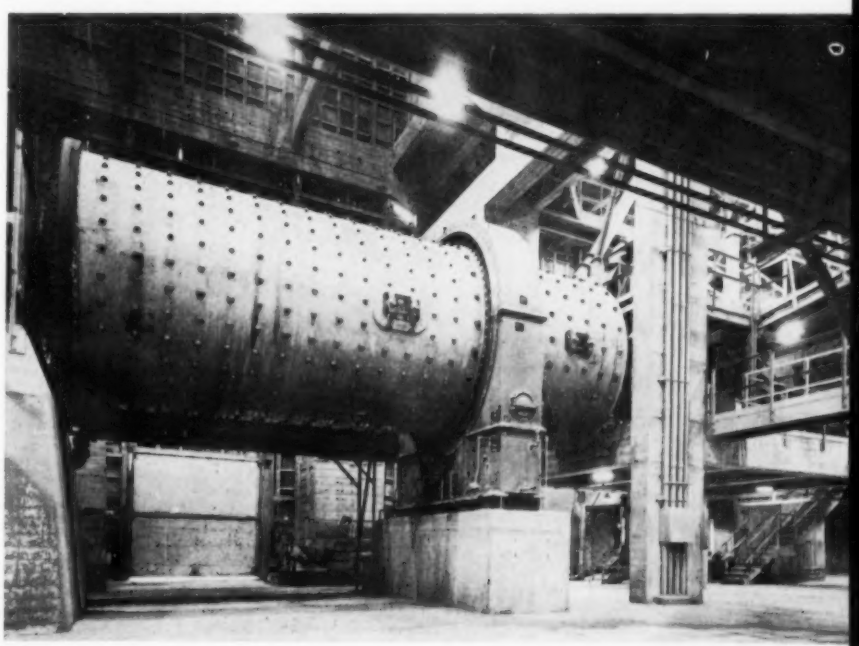
1957, totaling 338,315 tons, compared to 124,560 tons in 1956. Final figures on imports are not yet available, but the total through November, 1957, was 88,305 tons, a very considerable drop from the 677,617 tons imported in all of 1956.

The capacity of the cement industry was increased in 1957 by major expansion programs at four plants. These were made by the British Columbia Cement Co., Bamberton, B. C.; the Canada Cement Co., Woodstock, Ont., the Inland Cement Co., Ltd., Edmonton, Alta., and the St. Lawrence Cement Co., Clarkson, Ont. The three last-mentioned plants were all originally built in 1956 and then expanded. These four plants added 5,450,000 bbl. to the capacity of the cement industry, for a total increase of nearly 7,000,000 bbl. in 1957. There were undoubtedly also minor increases in capacity at other plants in Canada, and some of the increase in capacity at one of the above four plants probably replaced existing capacity.

There was a change in ownership late in 1957, when the Inland Cement Co., Ltd., with a 2,000,000 bbl. plant near Edmonton, Alta., took over the new 1,100,000-bbl. plant of the Saskatchewan Cement Corp. near Regina, Sask., which went into operation late in 1956. It is also reported that the British Columbia Cement Co. merged recently with Evans, Coleman & Gilley Bros., Ltd., large distributors of building materials in the Vancouver area.

The capacity of the cement industry will be increased in 1958 by two new plants but apparently there will be no large expansion programs. The new 1,500,000-bbl. plant of Lafarge Cement of North America Ltd., at Lulu Island, B. C., was scheduled to begin operation in March, as was the 1,650,000-bbl. new plant of the Lake Ontario Cement Co. Ltd. at Picton, Ont. As usual, there are several rumors of new plants to be built. Imperial Cement, Ltd., late in 1957 announced plans for a new 1,250,000,-bbl. plant at Big Lake, near Edmonton, Alta. Construction is to start early in 1958, and completion is scheduled for early in 1959. No major expansions are planned for the immediate future, but several companies have worked out such programs which can be put into effect whenever desired.

Cement makers in Canada, in general, are mildly optimistic about 1958, and more so about the long-term future. It is conceded that there is now considerable overcapacity in the industry and that it may take several years for demand to catch up. In at least one province where demand in 1957 was down



The first two 2,000-hp. clinker mills in the new mill building of the Canada Cement Company's Montreal East, Que., plant. These are internal water-spray-cooled units.

Lake Ontario Cement Portland Company's 1,650,000-bbl. plant, completed in March, 1958, at Picton, Ont.

due to the decrease in construction volume, some improvement is expected in 1958. One producer expects some increase in residential and highway construction which might offset any extended dip in industrial construction.

Serious concern was expressed by several producers over the mounting costs of cement manufacture. According to one spokesman, labor and freight rates were the major contributors, and a price increase was said to be necessary to compensate for them. Another reported that increased costs in 1957 pared profit margins and left net earnings only slightly above 1956, in spite of a substantial rise in operating profit. Executives of this company feel that cement costs must be kept down if cement is to maintain a competitive position against other building materials, and if new uses for cement are to be developed.

No general data is available, but one company reports a steady increase in bulk shipments to about 59 percent and in truck shipments to about 56 percent. One producer predicts that shipments to the United States will probably continue as long as Canadian cement prices are considerably lower than those along the border, inside the United States. It is felt, however, that these shipments will total less than 1 percent of the total U. S. demand.

PLANT EXPANSIONS

British Columbia The British Columbia Cement Co., Ltd., Bamberton, B. C., in 1957 finished a 2½-year expansion program. In June the company put into operation the new No. 5 kiln, a 350-ft. Vickers wet process unit. This added 850,000 bbl. of capacity, for a total of over 3,000,000 bbl.

Canada Cement The Canada Cement Co. completed its extensive expansion program in April, 1957, with the addition of a second 12- by 450-ft. F. L. Smidth kiln at its Woodstock, Ont., plant, and the first stage of a new Smidth clinker-grinding department in June at the Montreal East plant. These increased the productive capacity of the company by 1,500,000 bbl., to about 24,000,000 bbl. annually. There has been no recent information on proposed plans to double the present 800,000-bbl. capacity of the Havelock, N. B., plant by the addition of a new kiln.

Ciment Quebec Ciment Quebec, Inc., St. Basile, Que., plans a gradual expansion program to increase output from 2,400 bbl. daily to about 6,000 bbl. daily. In 1957 this company spent over $400,000 on its quarry and other work, including new silos, a dryer and grinding mills.

Lafarge Lafarge Cement of North America Ltd., completed its new 1,500,000-bbl. plant at Lulu Island, B. C., early in March, 1958. Limestone is obtained from a quarry on Texada Island. This plant has one 450-ft. wet process kiln.

Lake Ontario The Lake Ontario Portland Cement Co., Ltd., is reported to have just completed (March, 1958) its new cement plant near Picton, Ont. This dry process operation has a capacity of 1,650,000 bbl. annually. Equipment includes two 11- by 375-ft. kilns, four 1,250-hp. raw- and finish mills, and a Fuller raw-blending system. There is a 1,200-ft. deep-water dock, and shipments are also made by rail and truck. A self-unloading boat carries cement

(*Continued on page* 141)

ROWE KEEPS CLIMBING

with Cities Service Products

For 50 Years, Rowe Contracting Company of Malden, Mass., has been an ever-growing name in the crushed stone industry. And for the past 25 of those years, Rowe has relied on Cities Service fuels and lubricants every step of the way.

Rowe's business is twofold: Working the oldest active quarry in the Boston area, and operation of a drilling-blasting service throughout New England. Here's a sample of the part Cities Service plays in both phases:

For Truck Engines, Cities Service C-300 Motor Oil has given consistently outstanding performance throughout years of rugged New England winters. Blended from high quality base stocks plus an extremely effective additive combination, this versatile oil keeps carbon, sludge, and varnish to an absolute minimum. Extends period between overhauls.

For General Lubrication, multi-purpose Trojan H-2 Grease has proved a real worksaver and timesaver. This new grease greatly simplifies inventory—is ideal for chassis, wheel bearings, water pumps and other uses. And it actually takes *less* of this superior lubricant to do an effective job!

For Jack-Hammers, both at the quarry and in Rowe's drilling-blasting service, Cities Service Neptune 2-Z provides the exceptional oiliness and easy flow needed for trouble-free operation. Rowe's hammers keep biting away—regardless of weather.

These are just a few of the ways that Cities Service works for Rowe . . . and just a hint of the way that Cities Service can work for *you*. Get the full story from a Cities Service Lubrication Engineer. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

Rowe's 40 Trucks are kept on the go with Cities Service C-300 and C-800 Motor Oils. Rowe also operates drilling-blasting service throughout New England.

Widely known throughout the industry, Warren Rowe is Vice President of the National Crushed Stone Association. A man who knows his business and his lubricants.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Enter 137 on card, page 101

A view at the Great Western Aggregates pit. One truckload of shale moves out of the recently opened pit as a second pulls in beside the shovel. The earthmover at the left is removing overburden from the shale strata.

Great Western Aggregates Producing 750 Cu. Yd. Daily

By HARRY F. UTLEY

ANOTHER ON THE SPOT REPORT

GREAT Western Aggregates, Inc., of Denver, a subsidiary of Ideal Cement Company, has completed its first year in production of "Idealite," an expanded-shale lightweight aggregate, at its Laramie, Wyo., plant.

Shipments of Idealite have continued to mount as production and sales co-ordinated. By the fall of 1957, shipments were approaching plant capacity as the building fraternity of the West became increasingly familiar with the product, and aware of its advantages and possibilities.

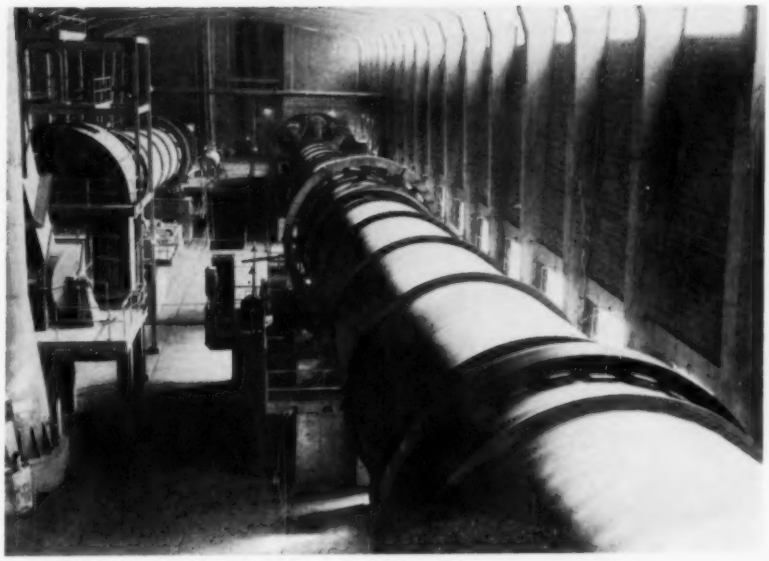
The big plant at Laramie currently has a capacity of about 750 cu. yd. per day. By May, 1957, monthly sales were 4,000 cu. yd. This volume was more than doubled in June, when the figure rose to 9,000 cu. yd. In July, shipments had reached 14,000 cu. yd., in August, 16,000 cu. yd., and in late September, when the plant was visited by the writer, sales for the month were calculated at 18,000 cu. yd.

This plant, about 3 miles south of Laramie, was built by the Federal Government during World War II

as an experimental facility to extract alumina from local anorthosite. In 1955 the plant was declared surplus property and was sold at auction to Ideal on its bid of $1,373,000. Much of the existing machinery was of no particular use in the basic manufacture of expanded-shale aggregate. However, the main piece of equipment, a 12- by 266-ft. rotary kiln, was ideal for economical and volume production of the lightweight aggregates.

In the process of conversion, Great Western Aggregates erected a crushing-and-screening department for raw shale, built an addition to the raw-storage hall, revamped the belt-conveyor system for handling both raw and finished product, and constructed four finished-aggregate storage silos. Three Peterbilt end-dump truck-trailers were also purchased and placed in service. These units are capable of hauling 30 tons of shale from the pit to the plant, a distance of 8 miles. They are powered by Cummins 230-hp. turbocharged diesel engines.

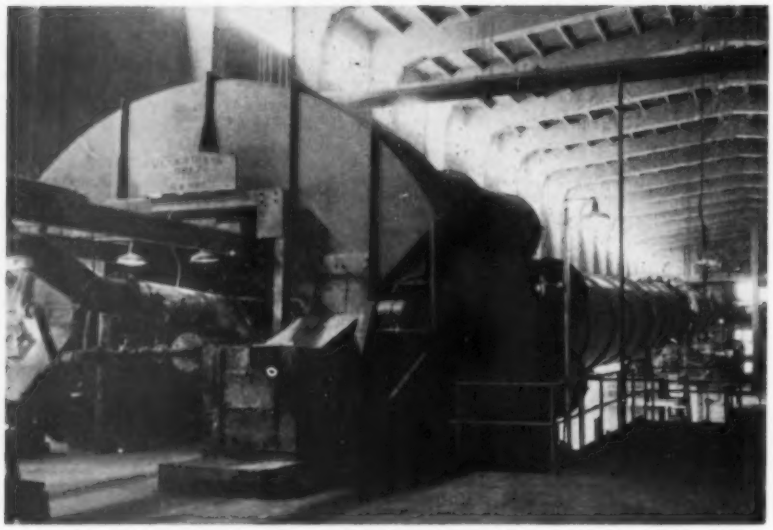
The pit which supplies the clay-shale lies in the Benton formation about 8 miles southwest of the plant, and the relatively soft material is excavated and loaded directly into the Peterbilt trucks by a 1½-cu. yd. Marion shovel. At the plant, the haulage units discharge their loads into a 110-cu. yd. receiving hopper, from which a pan-conveyor delivers to a 100-t.p.h. Williams hammer mill.



This 226-ft. kiln produces Idealite. At the top left is a dryer which is not currently being operated.

From the mill the product is split-fed to a pair of Hewitt-Robins Eliptex single-deck screens carrying ⅞-in. mesh and equipped with rubber balls below decks. The balls bounce against the decks to effectively prevent plugging and blinding of the mesh—a situation that might otherwise occur since the shale contains

An aerial view of the Great Western Aggregates plant at Laramie, Wyo., in winter.



At the right of the burner pipe in this kiln view is the enclosed vibrating grizzly which takes the aggregate as it comes from the cooler cylinders.

about 12 percent moisture. Screen oversize returns to the hammer mill in closed circuit, while the two sizes of shale, plus 5/16 and minus 5/16 in., are conveyed to the raw-storage building. A secondary hammer mill is now being installed to provide better control of the fine-fraction gradation.

Reclamation from storage is by way of a floor-level reclaim hopper, belt conveyor, and bucket elevator to the 350-ton kiln-feed bins at the upper level of the main building. A Hough Payloader feeds from storage piles to the reclaim hopper. The two sizes of raw shale are burned (bloated) separately in the kiln. Operating practice is to stay with one size continuously for a week or 10 days, although this may vary with market demands. However, it is planned to burn both the sizes, simultaneously as soon as facilities can be installed to assure proper gradation control.

The F. L. Smidth all-welded kiln, 12 ft. in diameter and 266 ft. long, slopes ½ in. per ft. and is equipped with Unax multiple-cylinder coolers at the discharge end. It turns at about 70 r.p.h., and is driven by a 75-hp. motor through Philadelphia gears. The fuel is natural gas, and is fired with a burner of company design. The hot zone is about 30 ft. from the back end. This well-instrumented kiln has been re-lined with refractory brick as required for present service.

Immediately to the right of the burner floor an Allis-Chalmers vibrating grizzly has been installed to take the Idealite aggregate as it comes from the cooler. Grizzly bars are spaced ⅞ in. apart, and the rejects are wasted. This waste does not exceed 3 percent of the output, however. No attempt is made to reduce the agglomerated oversize by crushing since the Idealite aggregate is strictly a "coated" product with a glazed surface-seal.

This type of lightweight aggregate has a vesicular interior, of course, but the outer skin of each rounded particle is completed sealed. This impervious coating resists water absorption when used in concrete and is said to contribute to lower drying shrinkage and higher strengths. In the opinion of company personnel, coated-aggregate concrete also requires less water and cement to yield a given strength, and these strengths are as high as, or higher than sand-and-gravel concretes.

In producing coated aggregate such as Idealite, slightly more fuel is required than in burning expanded shales which are crushed afterward. The burning operation is also extremely critical. Temperatures and atmospheric conditions must be held within very narrow tolerances to avoid kiln "logging" and improper burning.

After passing the grizzly, the product is conveyed to Hewitt-Robins double-deck screens above the finished-material silos, where the three final sizes are separated. These are: minus ¾ plus 5/16 in.; minus 5/16 plus No. 8; and minus No. 8. Each of the four reinforced-concrete storage silos has a capacity of 3,000 cu. yd. They are made of 6,000-lb.

(*Continued on page* 146)

This view of the storage silos shows the dog-leg chutes which permit car loadings without spotting of cars.

Canadian Cement Review

(*From page* 136)

to Toronto and Rochester, N. Y., where storage and packing plants have been built.

Late in 1957 the company completed a new 750-t.p.h. crushed stone plant at Picton which can load self-unloading boats at the rate of 2,000 t.p.h.

St. Lawrence The St. Lawrence Cement Co. in 1957 completed its new 3,000,000-bbl. plant at Clarkson, Ont. This was originally to be a 1,500,000-bbl. plant with a 12-ft. 6-in. by 402-ft. kiln. Before this operation was completed late in 1956, it was decided to double the capacity. A packing plant at Montreal, to be supplied from either the Quebec or the Toronto plant, was completed early in 1957.

According to latest information, a new plant is to be built at Dundee, Mich., by the Dundee Cement Co. an affiliate of St. Lawrence.

Reclamation of Land Shown In American Aggregates Film

A new film, *The Rumor,* produced for the American Aggregates Corporation, Greenville, Ohio, is now available for showing. The 14½-minute, 16-mm. sound film in Kodachrome color was made by Cinecraft.

The film tells the story of the sand and gravel industry's efforts to rehabilitate the land from which basic materials have been mined. Effective scenes shows how rehabilitated land is transformed into parks, recreation areas, lakes, shopping center sites, and residential areas.

For further information concerning *The Rumor,* contact William Rhodes, treasurer, American Aggregates, Greenville, Ohio.

The nine cement plants in Turkey produced a total of 1,260,973 metric tons in 1957, an increase of 290,624 tons over the 1956 figure of 970,349 tons. The completion of new plants this year is expected to boost 1958 output to at least 1,600,000 tons, and possibly 1,750,000 tons. An output of 2,500,000 metric tons is predicted by the end of 1959.

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DRY DUST CONTROL

If you're airing a dust control problem for industrial process or community relations . . . consider the factual benefits of field-proven Ducon Cyclones for dry collection. Hundreds of leading plants throughout the world, handling a wide variety of products, have found that Ducon dry-type collectors provide the continuous operation needed to capture nuisance dusts and recover usable product . . . most effectively, and with no processing down-time for sludge clearance. Consult a Ducon field engineer who may have a ready answer for your specific dust control problem.

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Enter 141 on card, page 101

Big 64 square-foot body opening permits loading Dumptor over the side or either end. This saves spotting time, reduces spillage — increases haul production. Dumptor is quickly loaded by shovel, dragline, clamshell crane, or front-end loader.

One-second gravity-dump speeds haul cycles. Dumptor has no troublesome body hoist, no hoist maintenance. Gravity-dump never balks, and never wears out.

On the haul Dumptor® travels forward or backward in 3 identical speed ranges — no need to turn. Its fast shuttle speeds offer a big production advantage. Every turn saved cuts 15 seconds off cycle time.

With Koehring Dumptor you get

A BIG TARGET for FAST LOADING

In mine or quarry work, an easy-to-load hauling unit steps up output of the loader, reduces spillage, adds extra trips to daily production. Wide-flared body of 6-yard Dumptor provides a big, square target — *64 square feet, to be exact* — for loading over the sides or either end.

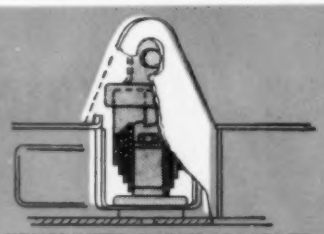
On the haul, heavy-duty Dumptor has plenty of tractive power. There's over 6 H.P. for every ton of loaded weight. It accelerates fast, pulls through soft ground with less shifting, can climb grades up to 24% fully loaded. With the same high speeds in either direction, fast-shuttling Dumptor travels round trip without loss of time for turning.

Dump action is simple and trouble-free. Operator trips a latch, and *gravity* dumps the load in *one second*. In sticky materials, free-swinging "kick-out" pan breaks load suction for fast, clean dump. When hauling rock, pan is bolted to floor of dump body — adds an extra ½-inch layer of steel protection.

Dumptor also has a ton of strength for every ton of payload capacity. Sides and ends of body are rib-reinforced. Double-plate bottom is lined with multiple steel beams. Chassis is heavily trussed. Your Koehring distributor has more information that will interest you. See him today, or write us for new Dumptor catalog.

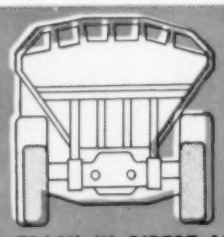
KOEHRING
DIVISION OF KOEHRING COMPANY
MILWAUKEE 16, WISCONSIN

K817



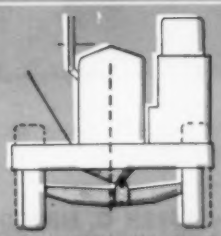
HEAVY-DUTY SHOCK-ABSORBER

Koehring Dumptor has a heavy, shock-absorbing, volute snubber — mounted between main frame and steering axle. No leaf springs. Big shock-absorbing drive tires eliminate springs and spring maintenance on drive axle.



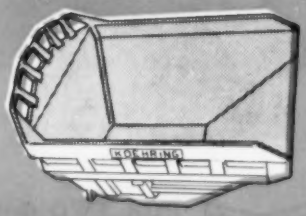
TIRES TRACK IN DIRECT LINE

Wide, heavy steering axle puts Dumptor steer wheels in line with drive wheels. Tires track in the same path. There's less rolling resistance, better traction in soft ground, on loose stockpiles and over rough haul roads.



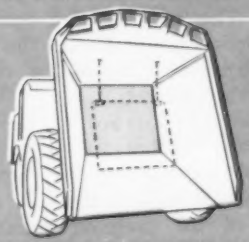
OFF-SET PIVOT ON AXLE

Pivot point on steering axle is offset from center line 3¼" toward operator side of Dumptor. There's no sag, even with unbalanced loads. Steering axle oscillates up to 21°, helps keep twisting strains out of main frame.



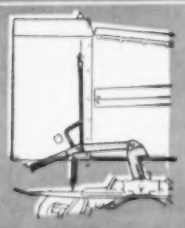
STREAMLINED ALL-STEEL BODY

There are no bulges or ledges inside the body. Top edge is box beam construction. Sides and ends are ribbed with 5 and 8-inch channels. Bottom is lined with multiple steel beams. Sturdy ridge bar joins rock guard teeth.



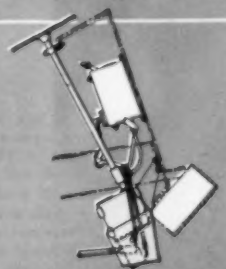
BOLTED OR FREE-SWINGING PAN

Heavy steel kick-out pan is ½" thick. Pan can be bolted to body floor for extra protection when loading rock. Remove bolts, and pan has swinging kick-out action . . . breaks load suction when dumping wet or sticky materials.



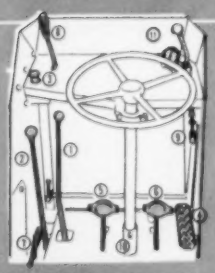
SIMPLE BODY LATCH

Body latch for 1-second gravity dump is simple and trouble-free. Latch is engaged by a single hook mounted on the chassis frame. Dump lever is located inside cab in an easy-to-reach position for quick effortless dumping.



HYDRAULIC POWER-STEER

Power steering adds to Dumptor maneuverability for fast spotting, lets driver handle off-road travel with ease. Dumptor has a short turning radius of only 19'-3", far less than other haulers of comparable capacity.



EASY-REACH CONTROLS:

(1) speed gear shift, (2) directional gear shift, (3) starting aid, (4) foot throttle, (5) clutch pedal, (6) brake pedal, (7) parking brake, (8) body release lever, (9) hand throttle, (10) light control switch, (11) Centralator.

Natl. Slag Assn. Operators

Offered Varied Program At Fifth Annual Meeting

By BUREN C. HEROD

ANOTHER ON THE SPOT REPORT

FOR TWO days, February 11 and 12, over 40 members of the National Slag Association pursued an intensive program of informal discussion and idea-exchange during the group's fifth annual plant operators meeting. Held at the Sheraton-Blackstone hotel in Chicago, the meeting was scheduled in accordance with a decision made at last year's gathering to meet in 1958 concurrently with the N.S.G.A. and N.R.M.C.A. conventions. This gave the slag operators an opportunity to inspect the biennial equipment exposition of the two other groups.

Chairman Edward C. Levy Jr. (Edward C. Levy Co.) presided over the various sessions. Gerald S. Snyder (Buffalo Slag Co.), chairman of the program committee, was assisted by E. E. Miller (Standard Slag Co.), W. F. Pierce (Buffalo Slag Co.), L. L. Warren (Buffalo Slag Co.), William H. Spooner (Bethlehem Slag Co.), and F. E. Hayes (Duquesne Slag Products Co.).

The agenda was made up of a wide range of subject matter on which the several operators were canvassed and to which they contributed. Subjects to be discussed had been previously mailed to the members, along with a request for any other topics that might be of general interest, and the operators therefore came to the meeting prepared with specific data on the points to be discussed.

Illustrative of the interesting material offered are the subjects listed on the program. Among these were: helps and hints in plant equipment operation and maintenance, including innovations effective in reducing maintenance costs; effectiveness and types of records kept on mill delays; methods employed in removing iron from rough slag; safety practices, and safety methods employed with best results; plant dust control methods, and their effectiveness; power shovel maintenance in hot-slag pits; plant electrical equipment; and job automation.

In addition to the operating sessions, general luncheons were held on both days. Safety was the theme during the first one, which was the annual safety awards luncheon. Recognition of the plant safety contest winner for 1956 was imple-

Carlos Fernandez Leal (center), a new N.S.A. member from Monterrey, Mexico, is welcomed to the meeting by Edward Levy Jr. (left) and Ed Bauman, N.S.A. managing director.

Most of the members attending the session were on hand for this group photograph.

mented by the awarding of the PIT AND QUARRY trophies and the Certificates of Accomplishment in Safety provided by the U. S. Bureau of Mines. For the first time, individual certificates were made available for each man in the crews that contributed to the records set by the 19 winning plants.

The PIT AND QUARRY bronze plaques were presented to the winners of class A (plants operating more than 60,000 man-hours) and class B (less than 60,000 man-hours) by B. C. (Sandy) Herod, field editor, PIT AND QUARRY. The former was won by the Woodlawn Plant No. 1 of Buffalo Slag Co., with a total of 153,366 injury-free manhours for the year. First enrolled in the 1950 contest, this plant in the eight years of competition has operated 781,473 man-hours, with only 11 employee injuries. In two of those years, it placed either second and third in the contest.

Class B honors went to the Morrisville Slag Plant of the Warner Co.—a winner in the first year of participation in the competition. It led the others in its group with a total of 59,477 man-hours without a lost-time injury.

The Bureau of Mines Certificates of Accomplishment in Safety were also presented to representatives of the remaining 17 contest winners. (As noted above, the individual employees will also receive certificates.) Names of these plants, and their records, were listed in the December, 1957, issue of PIT AND QUARRY.

Despite the fine record shown by the above plants, Edward W. Bauman, managing director of N.S.A., pointed out that the aggregate injury experience of the 47 competing plants in the 1956 contest was high in terms of frequency and severity rates, and in the average numbers of days lost per temporary injury. He also explained the new rules governing the safety contest and noted that all slag processing plants in the continental United States are eligible to compete. A

Class A and B winners of the N.S.A. 1956 safety competition received the PIT AND QUARRY trophies. Left: Ray Smith, representing the Buffalo Slag Company's Woodlawn Plant No. 1 (153,366 man-hours) receives the class A plaque. Right: A. I. Martindale, representing the Warner Company and the Morrisville Slag Plant (59,477 man-hours) receives the class B trophy. The awards were presented by Sandy Herod, field editor, PIT AND QUARRY.

Edward C. Levy Jr. (Edward C. Levy Co.) present chairman, with two past-chairmen, J. A. Carnathan (Birmingham Slag Co.) and Ken Kagarise (Standard Slag Co.).

revision of enrollment requirements provides that, in order to be eligible for awards, participants must have enrolled during the first quarter (prior to July 1) of the April 1-March 31 fiscal year. Final reports must be submitted to the Bureau of Mines within 45 days after the closing of the competition period, *i. e.*, by May 15.

A new program feature was provided during the luncheon on the second day, when a guest speaker discussed a special subject of interest to the operators. On this occasion Raymond Zack, industrial manager, Minneapolis-Honeywell Regulator Co., spoke on plant automation. It was indicated that slag plant processing is relatively simple in terms of automation, and that the problems of the various operators are largely parallel.

Illustrating the background of growth in automation, Mr. Zack stated that approximately 10 percent of the investment in the average chemical plant today is in automation equipment, as compared with a fraction of a percent 20 years ago. Significantly, he indicated that automation controls can be impractical—economically—if they represent only an "over design" and do not serve a real, functional purpose in improving plant efficiency. Further, the most benefit is derived when controls are tailored to specific jobs in which they are used consistently — not intermittently.

Problems in slag processing, he pointed out, are not complex, and they readily lend themselves to solution. The real project is to determine an area in which difficulties can be most feasibly remedied with automation controls. Possible points indicated by Mr. Zack include crusher feed rate and control, with accompanying recording of shutdown time and length; drying controls, actuated by slag moisture content, that would provide the proper but not excessive heat; a measure of the power required to drive crushers, related to a control over the feed rate; and a measure of output (tons produced). A reference of feed rate to production rate will serve as a measure of the plant's efficiency, Mr. Zack stated.

An international flavor was lent to the meeting, and to the group enrollment, as pointed out by Mr. Bauman in his introduction of a new member from Mexico. At the opening session, the managing director introduced Carlos Fernandez Leal, manager, Constructora Popular, S. A., Monterrey, Mexico.

A nominating committee appointed by chairman Edward C. Levy Jr., presented the following candidates, who were elected to hold the indicated offices for the next meeting: committee chairman —Gerald S. Snyder, Buffalo Slag Co.; and program chairman—L. L. Warren, Buffalo Slag Co. With respect to the locale for next year's gathering, a decision of the chairman, in co-operation with the program committee, will be announced later this year.

Great Western

(*From page* 140)

Idealite-aggregate concrete, and were slip-formed and poured by Stearns-Rogers of Denver.

Physical properties of Idealite, as revealed by the company, are as follows:

	Spec. Gravity	Absorption	Wt. per Cu. Ft.
Fine	1.80	3.85	67 lb.
Medium	1.41	6.80	52 lb.
Coarse	1.34	6.57	47 lb.

(Specific gravity and absorption determined after 30-min. immersion.)

A typical gradation table for the aggregate, as provided by the company follows:

Sieve Size	Fine % Ret.	Fine Cumul. %	Medium % Ret.	Medium Cumul. %	Coarse % Ret.	Coarse Cumul. %
¾-in.					0	0
5/16-in.					91	91
No. 4			51	51	9	100
No. 8			40	91		
No. 16	23	23	9	100		
No. 30	28	51				
No. 50	23	74				
No. 100	16	90				
Pan	10	100				
Fineness Modulus		2.38				

The Laramie plant is served by the Union Pacific Railroad, and either cars or trucks may be loaded from the silos. More than 90 percent of shipments go by rail, however.

Main offices are located in the Boston Building in Denver. Cris Dobbins, president, also heads the parent concern, Ideal Cement Company. R. F. Blanks is vice-president and general manager. Thomas C. Brown manages the operations at Laramie, and Weldon I. Leonard is plant engineer.

Fire recently destroyed the building housing crushing and grading equipment of the Auglaize Stone Company, Defiance, Ohio.

The Cullen and Pamplin plants of the Kyanite Mining Corporation, Cullen, Va., received the National Safety Council award for their outstanding safety record.

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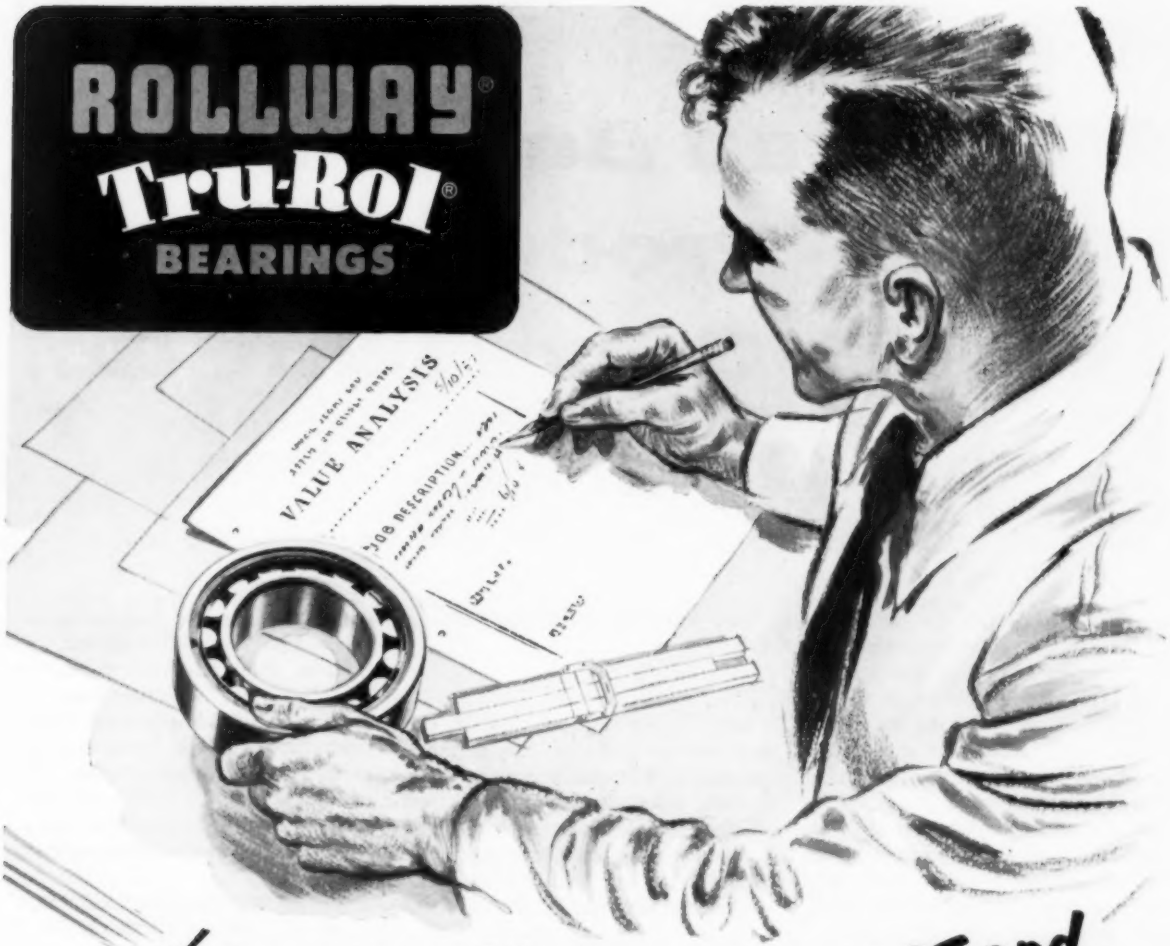

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When you need maximum precision bearings, buy them. They'll save you money. Rollway has them in all types and sizes.

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Stabilized Base Mix Plant-Produced by M. J. Grove Lime Co.

By WALTER E. TRAUFFER

ANOTHER ON THE SPOT REPORT

ONE OF the newer developments in road materials is plant-produced stabilized base mix such as that being made by the M. J. Grove Lime Company near Frederick, Md. Instead of hauling two sizes of stone—base and dust—to the job, spreading, rolling, watering, etc.,—a slow, expensive procedure, and not too uniform—the finished product is delivered in trucks, then spread, rolled and finished. The plant method insures a uniform product meeting state specifications.

This type of product has been popular in Virginia, North Carolina, and Tennessee for several years. When Maryland followed suit, executives of the Grove firm made a study of other operations and designed a 400-t.p.h. plant using their best features. This plant, the first of its type in Maryland, went into operation May 10, 1957, and produced nearly 200,000 tons up to the time it was visited early in October.

The stabilized base mix plant of the M. J. Grove Lime Co. at Frederick, Md. Trucks are shown dumping aggregates to stockpiles (background) and receiving finished product for delivery (left).

The location is at the main operations of the company south of Frederick, where crushed stone, lime, and ready-mixed concrete are produced. Most of the output was sold for state highway projects, but some also went for county roads and for private use. Everything is produced to state highway specifications. Essentially, the operation consists of blending four sizes of aggregates, adding calcium chloride and water, mixing in a pug mill, and discharging into trucks which haul to the job. The entire plant is controlled from the pug mill platform.

The product of this plant is made according to the rigid specifications of the Maryland State Roads Commission. To meet these specifications it is necessary, at the Grove plant, to blend four sizes of stone—1½-in. crushed stone, 1½-in. crusher run, No. 10 dust (minus ¼-in.), and fine stone sand (No. 12) as the source of minus 40-mesh material. These constitute, respectively, 16, 30, 24 and 30 percent of the blend. The specification

One of four electric vibrating feeders which proportion different sizes of aggregates on the reclaiming belt. The automatic paddle shutoff is shown above.

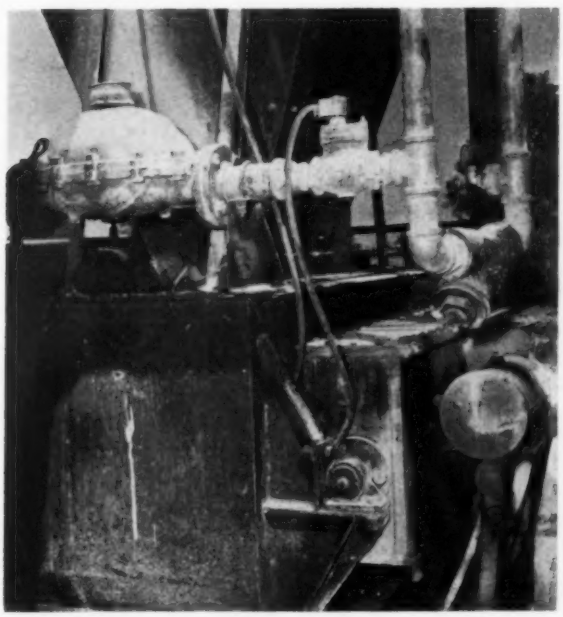
The fifth and final feeder, which measures out calcium chloride at the desired rate. Infra-red lamps on both sides help to prevent sticking and uneven flow.

requirements are as follows:

Opening	Percent Passing
2-in. sieve	100
1-in. sieve	75-95
½-in. sieve	60-75
No. 4 sieve	45-60
No. 10 sieve	33-48
No. 40 sieve	15-30
No. 200 sieve	5-12

The fraction passing the No. 200 sieve shall not be greater than ⅔ of the fraction passing the No. 40 sieve.

The specifications further require that "The coarse material 'added fines, water, C. C. (when required)' shall be accurately proportioned and mixed in an approved mechanical plant. The total moisture content of the mixture shall be not less than 5 percent nor more than 9 percent by weight. The exact moisture content will be set up by the laboratory. In case the material becomes too dry before compaction, water shall be added at the contractor's expense. C. C. flakes at the rate of 7 lb. per ton or pellets at the rate of 5.733 lb. per ton of mixture shall be added when directed by the engineer."



The 400-t.p.h. pug mill mixer which was designed for this work, with the water meter, solenoid valve, and manual, quick shut-off emergency valve.

It was apparent from the first that a major problem would be providing a constant supply of raw material. This was solved by building a ground level reclaiming tunnel over which four sizes of material are stockpiled. First a fill and ramp of about 100,000 tons of crusher run material was built up during the winter preceding the opening of the plant. The stockpiles are maintained by trucks dumping over the tunnel. An Allis-Chalmers bulldozer is kept busy pushing the materials over the four tunnel openings, at each of which there is a live storage capacity of 300 to 400 tons.

Under the four stockpile openings are electric vibrating feeders—three Syntron and one Jeffrey—with shutoff gates above. Each feeder has an individual rheostat to control the rate of flow, which often must be adjusted several times hourly as the moisture content of the aggregate changes and affects the rate of

feed. Most of these adjustments are based on visual estimates but these are checked four to six times daily by sieve tests. An Alpha-Lux Co., Inc., "Speedy" moisture meter is used. A shovelful of material is taken from the truck. A 10-gram sample of the fine material is then put in the meter, along with a small amount of carbide drying agent. The cap is put on the meter while it is horizontal, so that the materials will not mix. The device is then shaken thoroughly, and the reading is taken on the dial which is adjusted for the percentage of wet weight. To compensate for the lack of coarse in the sample, ¾ percent is subtracted from the reading. The moisture content varies from 1½ percent in the summer to 2½ to 3 percent in the fall or spring. After a rain it sometimes reaches 3½ percent. The finished product usually has a 4½ percent moisture content, but in hot weather it is run as high as 5½ percent to allow for evaporation.

The variation in moisture content on the stockpiles alters the rate of flow of the material, and the feeder rheostats are adjusted accordingly. The rated capacities of the feeders are: dust, 200 t.p.h.; sand, 140 t.p.h.; crusher run, 100 t.p.h.; crushed stone, 50 t.p.h. These are the rated capacities with a 6-deg. slope. All the feeders are operated with greater slopes, and the combined feed to the belt conveyor may go to 630 t.p.h.

Tests are made several times daily to check the accuracy of blending. Samples are taken off the belt after each feeder, the last one being the final check.

At each feeder there is a lever paddle tipped with old rubber belting which rests on the bed of material on the feeder. When the feeder runs empty, the paddle drops and shuts down the entire plant. When the plant is stopped because no truck is ready for loading, the feeders stop on a 5-second lag in order to fill that part of the belt which coasts on by. This eliminates any variation in the finished product.

The 30-in. by 175-ft. tunnel reclaiming belt conveyor is driven at the rate of 350 f.p.m. by a 15-hp. shaft- mounted American Pulley motor-reducer connected to a Twin Disc Hydrosheave fluid drive. This drive is important. When the belt is started up empty, the gradual start does not lift the belt off the curve; when the belt is loaded, the load on the motor is gradual. This is also important in starting up on a cold morning.

Where the conveyor emerges from the tunnel, there is a Syntron calcium chloride feeder rated at 4 t.p.h. This unit feeds Solvay 77-80 percent flake calcium chloride from a bin at the rate of 7 lb. per ton. Infra-red lamps on each side of the feeder insure even flow. The conveyor inclines to discharge into the 400-t.p.h. Barber-Greene pug mill, which is designed for this work. Water is measured into the feed end of the pug mill by a Niagara Buffalo water meter with a maximum capacity of 150 g.p.m. Added water is adjusted according to the moisture content of the raw material, and there is also a hand-operated quick shutoff emergency valve. A solenoid valve operated by main circuit to belt and feeders is ordinarily used. A 75-hp. motor drives the two paddle shafts which end in screw sections to feed out the finished product. The stabilized mix drops into a 5-cu. yd. hopper, from which it is discharged through hydraulically-operated clamshell grates into trucks.

The trucks must move into and out of place under the hopper rapidly as the hopper fills in about 20 seconds. Two batches are loaded into the 10-ton trucks in one minute. The use of a small hopper and multiple batches is designed to reduce the amount of segregation in the truck which would be caused by a single large batch.

The reclaiming tunnel is 8 ft. high, 9 ft. wide and 110 ft. long. It is built of precast concrete made in the company's products plant. The walls are of precast tilt-up units 10 ft. 6 in. high, 24 ft. long, and 12 in. thick. The roof is of precast beams and 8-in. thick slab. This type of construction saved both time and money. The entire tunnel was set up in 1½ days. The tunnel is ventilated by a fan through a stack.

The plant was designed by Jack Mason, company engineer, and was erected under his supervision by the company's maintenance and electrical departments. This operation is under the supervision of L. H. Boyer, plant manager.

Officers of the M. J. Grove Lime Company are: Robert B. Crothers, president; W. Jarboe Grove, executive vice-president; F. Grove White, vice-president; James H. Grove Jr., vice-president, operations; Edward D. Grove Jr., secretary-treasurer.

Cement Companies Show Reduced Profits in 1957

Consolidated Cement Corporation, Chicago, Ill., had net earnings of $1,336,800 or $1.60 per common share in the fiscal year ended December 31, 1957, compared with $1,836,600 or $2.19 a share the year before. Net sales were $10,375,100 in 1957 as against $10,199,600 in 1956.

Earnings of General Portland Cement Company, Chicago, Ill., were $6,983,200 or $3.36 per share in the year ended December 31, 1957, compared with $9,527,500 or $4.58 the year before. Net sales were $37,762,700 in the latest period, as against $45,310,400 in 1956.

Allentown Portland Cement Company, Allentown, Pa., reported net income of $2,342,998 or $2.03 per common share for the year ended December 31, 1957, compared with $2,728,801 or $2.35 a share in 1956. Net sales in 1957 amounted to $12,809,794 against $14,321,374 during the previous year.

Alpha Portland Cement Company, Easton, Pa., reported net income of $7,603,339 (before taxes) or $2.90 per share as against $11,378,759 or $3.45 a share for the year ended December 31, 1957. Sales in 1957 totaled $30,958,384; in 1956, $35,520,777. Flood losses amounted to $281,282.

Bessemer Limestone and Cement Company, Youngstown, Ohio, earned a net income of $2,366,745 or $6.49 per common share in the year ended December 31, 1957, compared with $1,791,037 or $4.90 the previous year. Total sales were $12,408,876 in 1957 and $9,472,895 in 1956. These statistics were unusual, since most cement companies reported lower returns in 1957.

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A.I.M.E. Meeting

(*From page 132*)

Chrome Ore *Free World Demand and Supply of Chrome Ore* by J. M. Warde of Union Carbide Ore Company, New York, covered the free world demand, with particular reference to United States requirements. If the free world demands increase as anticipated from 2½ million long tons to over 5 million in 1970, Dr. Warde stated, supplies of high-grade lump ore for metallurgical use, and of high-alumina ore required for refractories will become progressively shorter; and major changes in technology permitting the use of friable ore and of lower grade ore, will be necessary before 1970.

The present supply comes largely from distant, and in some cases, under-developed countries. Output of refractory grade ore from the Philippines and Cuba, presently the main source of United States supplies, will decline, due to exhaustion of the deposits, and the Transvaal and Southern Rhodesia will become the principal sources. Turkey will probably continue as a major source of metallurgical grade ore. The only source of chromite in the United States is from small deposits in Montana, the total output of which is bought for the national stockpile. The U.S.S.R. is believed to have plenty of chromite, and it formerly supplied large tonnages to international trade, but at present little is being shipped to the free world.

Heat Removal J. R. Tonry, Portland Cement Assn., in his paper, *Removal of Heat in Cement Grinding*, reviewed several methods of removing heat produced in the grinding of portland cement clinker, and dealt with a new method proposed in 1957 by C. F. Clausen of the Portland Cement Association. It is well known that in clinker grinding a major part of the energy used is converted into heat, and only a small proportion is required for the particle size reduction of the charge. When the temperature of the cement being ground approaches that where dehydration of the gypsum retarder takes place, some means of reducing the temperature must be used.

Current procedures include water-cooling of the mills, injection of water into the mills, and air-cooling of the air separator. A proposed method, as advocated by C. F. Clausen, is to withdraw continuously a part of the steel grinding balls, cool them in water or in air, and return the cooled balls to the mill. This method takes advantage of the favorably high temperature differential and high heat conductivity; it would also permit removal of any coating on the balls which interferes with grinding efficiency. Calculations relating to the proposed method of heat removal were given.

Ammonium Nitrate A panel discussion was held on *Use of Ammonium Nitrate Fertilizer for Blasting*. It was the concensus that fertilizer-grade ammonium nitrate is just as effective as specially prepared ammonium nitrate powders containing their own carbonaceous material and costing twice the amount. To use fertilizer-grade ammonium nitrate, it is mixed with fuel oil in the ratio of 1 gal. of oil to each 80 lb. of the nitrate, and loaded directly into the holes.

Because ammonium nitrate will take up water from the air, it should be detonated within 8 hours after loading, and it should not be used in wet holes. Blasting costs have been substantially reduced by its use —as much as 40 percent in some cases— and there has been no sacrifice in fragmentation over that obtained with explosives used previously. It was the opinion expressed by panel members that ammonium nitrate is here to stay as an explosive.

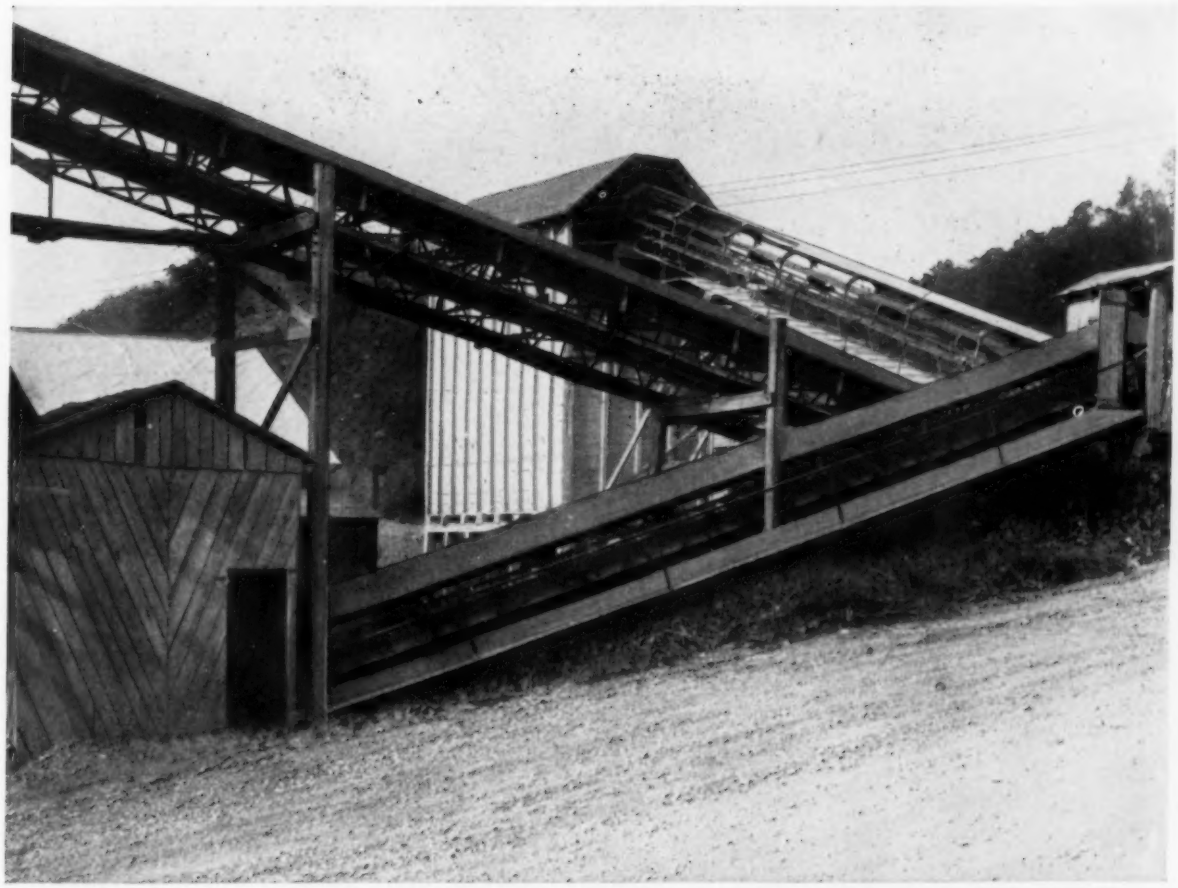
Expanded Slate *The Utilization of Pennsylvania Slate for Expanded Aggregates*, a paper by F. D. Hoyt of Penn State described the operation of a plant near North Bangor, N. Y. The waste slate from former operations in the district is crushed to minus ½-in. size, mixed with 6 percent of buckwheat anthracite coal, and fed to a 30- by 5½-ft. travelling grate sintering furnace that is fired by 12 burners using No. 4 fuel oil. The temperature ranges from 2,150 to 2,250 deg. F. After 2¼ minutes in the furnace, the slate emerges in an expanded form as a clinker, to be crushed to minus ¾-in. size in a chaser mill, and then screened to several sizes. The product, known as Exalite, has a density ranging from 24 to 41 lb. per cubic foot, depending on the size to which it is crushed. Production on a 3-shift basis is about 1,600 cu. yd. per day.

Industrial Minerals Division The guest speaker at the luncheon of the Industrial Minerals Division was Thomas M. Ware, vice-president and general manager, International Minerals and Chemical Corporation, Chicago, who spoke on the operations of his company, which is producing 19 industrial minerals including sand, clay, bonding agents, feldspar, nepheline syenite, potash, phosphate, and various other agricultural chemicals.

International's greatest new venture is the development of a potash mine in Saskatchewan, Canada. The company has 600,000 acres of land near Esterhazy, 120 miles northeast of Regina, and is sinking an 18-ft. diameter shaft to a depth of 3,300 ft. at an estimated cost of $4,000,000. The shaft is already down 400 ft. and is expected to be completed and in operation by 1960. Potash deposits in Saskatchewan are believed to be the largest and richest in the world, extending for 350 miles across the province in association with a vast salt bed at depths of 2,760 to more than 3,500 ft.

International has been producing potash at Carlsbad, N. M., since 1940, but insufficient reserves remain to support the scale of operations there, and it was decided to open a new mine in Saskatchewan. Whereas six products are made at Carlsbad, only one product—muriate of potash—will be produced at Esterhazy. The flotation process will be used to separate the potash from the associated rock salt, and operations in the $25,000,000 Saskatchewan mill are scheduled to begin in 1960. Production will begin at the rate of 2,000 tons of potash per day, but it can be stepped up to 6,000 tons with the facilities presently provided.

American-Marietta Company, Chicago, Ill., is constructing additional facilities at its plant in Roberta, Ala. With the completion of these additions in 1959 cement production is expected to be increased by 25 percent, and lime shipments by 53 percent.



Barber-Greene conveyor idlers and return rolls at this plant have required no repairs since they were installed in 1946.

Original belts and idlers roll on 11 years and ½ million tons later

"Our Barber-Greene conveyors—still equipped with the original belts, idlers and return rolls—have averaged over 50,000 tons of limestone aggregate per year since their purchase in 1946."

That's the report from Landon Vetter, vice president of Vetter Bros., Inc., Oakland, Maryland. He further states: "Our conveyors work an average of 10 hours a day, 5½ days a week, 9 months a year. After their constant service under these conditions, we wouldn't have anything but Barber-Greene conveyors."

Reports like Mr. Vetter's are not unusual because Barber-Greene conveyor idlers offer these distinct advantages: virtually unbreakable, jig-welded base frames . . . self-shedding base angles . . . interchangeable rolls made of heavy steel tubing . . . seamless steel grease reservoirs with Alemite grease fittings . . . 2° tilt to facilitate belt alignment.

Barber-Greene's complete line includes standard troughing idlers and return rolls, flat-belt and picking-table idlers, self-aligning idlers and return rolls, grain idlers, rubber impact idlers and self-cleaning return rolls. Idler widths from 16″ to 60″ with 4″, 5″ or 6″ rolls.

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quarry 4,000,000 tons of aggregate

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Industry Personalities

R. Crown

ROBERT CROWN has been elected to succeed his father, Colonel Henry Crown, as president of the Empire State Building Corporation of New York, N. Y. Colonel Crown will retain the post of chairman of the board.

Robert Crown is presently serving as vice-president and a director of the Material Service Corporation of Chicago, one of the world's largest suppliers of construction materials.

ALFRED L. PARME and WALTER E. KUNZE JR. have been appointed manager and assistant manager, respectively, of the Structural and Railways Bureau of the Portland Cement Association, Chicago, Ill.

Mr. Parme joined the P.C.A. as a structural engineer in 1940 and served as assistant to the manager of the Structural Bureau from 1953 to April, 1957, and since then as a consulting structural engineer.

Mr. Kunze has been with the association since 1952 as a structural engineer in the Structural and Railways Bureau.

JOHN L. HALLETT, vice-president of the Henry J. Kaiser Company, Oakland, Calif., has been appointed assistant general manager of the Heavy Construction Division.

In his new position, Mr. Hallett will assist the management of the division's several joint ventures and industrial projects overseas. His new responsibility covers current engineering or construction activities in Brazil, Australia, Paraguay, Venezuela, India, and Iran.

The following personnel changes have been made by the Huron Portland Cement Company, Detroit, Mich.:

RALPH F. DICKSON, former division sales manager of the Ohio and Wisconsin division, has been appointed division sales manager of New York and Wisconsin.

JACK GILES has been named assistant traffic manager.

BLAINE E. MILLER has been promoted from district sales manager of the Toledo (Ohio) district to division sales manager of the Ohio and Michigan division.

All of the three new managers will be headquartered in the general sales offices in Detroit.

Succeeding Mr. Miller will be ROBERT E. BROWN, former sales representative of the Toledo district.

The National Gypsum Company, Buffalo, N. Y., has created a new products division within its sales department and named ALBERT H. FAY director. Mr. Fay joined the firm in 1953 and was formerly general commodity manager.

Product manager of construction systems in the new division is JOHN J. COSTELLO, who will work on developing and designing construction systems for the company's gypsum and metal building products.

DOUGLAS C. GARDNER has been appointed sales manager of the Toledo (Ohio) division of Medusa Portland Cement Company, Cleveland Heights, Ohio, succeeding Frank G. Mooney, who has retired. Mr. Gardner started eight years ago in the Toledo division; he was formerly assistant sales manager.

T. V. Davis

Penn - Dixie Cement Corporation announces the appointment of T. V. DAVIS as superintendent of the company's plant in Richard City, Tenn., succeeding A. E. Legg, who is retiring after 49 years with Penn-Dixie and its predecessor companies.

Directors of the A. P. Green Fire Brick Company, Mexico, Mo., have announced the appointment of A. R. BARNETT, formerly vice-president, as director of A. P. Green Domestic Subsidiaries, including Canada. Mr. Barnett has been with the firm for 34 years, and has served in various executive capacities.

The election of J. J. OFFUTT as a vice-president and director of sales was also announced. Mr. Offutt has been associated with the Green organization since 1928.

ROBERT F. MAREK has been named manager of technical and management procurement, a new position in the personnel and industrial relations department of International Minerals & Chemical Corporation, Chicago, Ill. In addition to executive personnel procurement, Mr. Marek will be responsible for long-range organizational forecasting.

G. L. Otterson

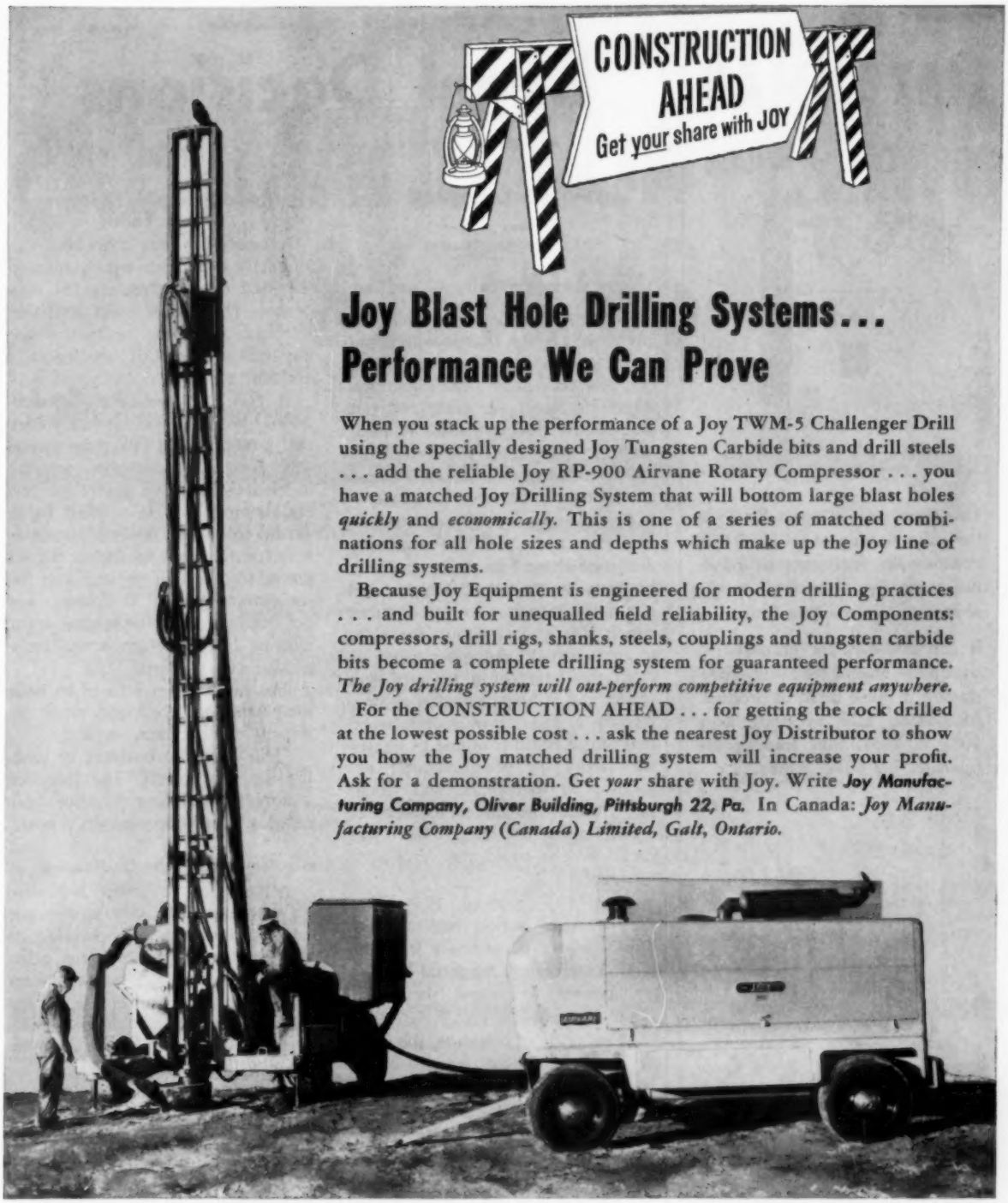
GEORGE L. OTTERSON has been appointed assistant technical director of Marquette Cement Manufacturing Company, Chicago, Ill.

Mr. Otterson was formerly a civil engineer with the U. S. Army Corps of Engineers.

Three vice-presidents were elected for the Pacific Coast Borax Company, a division of United States Borax and Chemical Corporation. They are L. L. FUSBY, in charge of production; R. W. HINCHMAN, sales; and M. H. PICKARD, market research and product development.

JAMES F. MORGAN JR. has been appointed quality control engineer for the Buffalo Crushed Stone Corporation, Bowmansville, N. Y., a subsidiary of Houdaille Industries, Inc., Buffalo, N. Y.

D. HUGH JENKS JR., manager of the asphalt division of Ashland Oil & Refinery Company, Ashland, Ky., was recently elected chairman of the board of the Asphalt Institute.



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Enter 158 on card, page 101

Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Lease Automatically Cancelled

The established rule is that the intention of the parties and the meaning of a lease contract are to be deduced from the contract, where its terms are plain and not ambiguous. Hence, a lease is automatically terminated the instant the lessee fails to comply with the exact terms of the lease contract.

For example, in *Smith v. Holmes*, 312 Pac. (2d) 228, the testimony disclosed these interesting facts. A property owner named Holmes and one Smith signed a written contract which clearly gave Smith the right to quarry rock and other minerals from the land for a term of five years "and as long thereafter as production is had." It was understood that Smith could continue to quarry rock from the premises after expiration of five years, and would pay Holmes the agreed royalties of 5 cents per ton as long as there was rock which could be profitably quarried.

From 1953 through 1955, after the five-year period had expired, Smith did not quarry rock from the land. Later Smith tendered Holmes a payment to renew the lease. Holmes refused it.

In subsequent litigation, the higher court held that the lease between Holmes and Smith was automatically terminated and that Smith could not start quarrying rock from the land after 1955. The court said:

"The purpose of the 'thereafter' clause was to prescribe conditions which must exist at the end of the primary five-year term and continue thereafter, and it required that production be had from the land to extend the lease. No rock was quarried after the late summer of 1953 and the lease terminated when production ceased at that time."

Residential Restrictions Held Valid

Recently a higher court held valid a city ordinance which zones a specified area exclusively for residences. This higher court held that although a zoning ordinance has not been enforced, it remains valid and enforceable.

In *Hill v. Board of Adjustment*, 301 S. W. (2d) 490, it was shown that a man named Hill, who owned several motor trucks, was engaged in hauling sand and gravel for several companies. He applied for a permit to build a ten-unit garage in a residential area to shelter his six dump trucks. Hill proved that the residential zoning ordinance had not been enforced for several years, alleging that therefore it was inoperative and rendered void.

The lower court refused to issue the permit, and the higher court approved the decision, saying:

"Hill is in the business of hauling dirt and gravel. The fact that a zoning regulation has not been enforced does not work its repeal."

Unreasonable Ordinance

A higher court recently held void an unreasonable city ordinance which prohibited the operation on the city streets of concrete delivery trucks have a gross weight of 20,000 lb. Another clause in the ordinance excepted motor vehicles operated over state highways within the city limits.

For illustration, in *R. Concrete Corporation v. City of Reading*, 142 N. E. (2d) 525, the testimony showed facts, as follows: A city passed an ordinance which prohibited operation on the city streets of motor trucks containing a gross weight in excess of 20,000 lb. The ordinance contained a clause to the effect that the ordinance was not applicable to vehicles operated on state highways which pass through the city; further, it was not applicable to motor trucks making deliveries to purchasers of merchandise located in the city. The higher court

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A single pump handles the output of two clinker mills
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through—a 6″ standard pipe
for—400 feet horizontally
and—110 feet vertically
with—230 horsepower!

Cement Plant—
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One pump handles the output of one clinker mill
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through—a 4″ standard pipe
for—1000 feet horizontally
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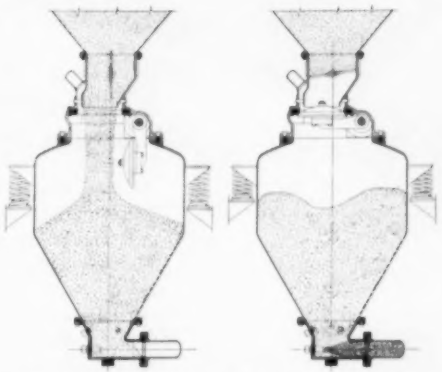

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The KENNEDY Pneumatic Conveying System is more efficient because:

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The KENNEDY Pneumatic Conveying System requires less maintenance because:

- only these small, inexpensive parts are subject to wear;
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- you get months of high capacity operation without attention.

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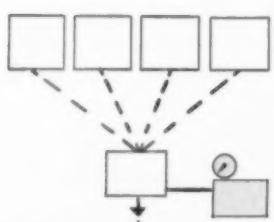

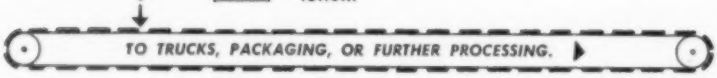

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promptly held the ordinance void because it violated the equal protection clause of the Fourteenth Amendment of the United States Constitution. The court said:

"The ordinance is illegal in that it imposes restrictions and penalties on those using the streets engaged in through traffic and imposes no such regulations upon those using the streets for other than through traffic, notwithstanding such traffic imposes the same stress upon the streets and creates the same hazard."

Bond Includes Transportation Charges

Recently a higher court rendered an important decision to the effect that a bonding company is obligated to pay for its defaulting contractor all costs of material, plus the transportation charges.

For illustration, in *W. Block Company v. D. Trucking Sand and Gravel Company*, 83 N. W. (2d) 130, the testimony showed the following facts: A dealer in sand and gravel contracted to furnish those commodities to a city, to which contract the Fidelity and Casualty Company of New York was a party. In other words, the latter company guaranteed to the city that the dealer would complete his contract.

In subsequent litigation, the higher court held that the Fidelity and Casualty Co. must pay for the trucking services and, also, the cost of sand and gravel furnished by the contractor to the city. This court said:

"No distinction is discernable between gravel sold by W. Block Company which was 'material furnished for' the contract, and the trucking services of Knuth and Hribar, which were 'work . . . performed . . . for' the contract."

Must Prove Control

Considerable discussion has arisen from time to time over the legal question: Who is responsible for payment of compensation or damages to an injured truck driver?

The person in direct control of the driver at the time of his injuries is his real employer, and must pay the compensation or damages. However, the fact that a person or company directs the driver to a location where materials are to be ob-

tained for hauling does not make him the employer.

For illustration, in *C. Sand and Gravel Company v. Monday*, 311 Pac. (2d) 812, the testimony showed facts, as follows: An employee named Monday drove a motor truck owned by one Ringer. The C. Sand and Gravel Co. made a written contract with a property owner to furnish gravel for the construction of a new runway. The gravel was obtained at a gravel pit and transported in various trucks, one of which was the truck driven by Monday. The latter was seriously injured and the legal question presented to the higher court was whether Monday could recover compensation from the C. Sand & Gravel Co. or from Ringer.

During the trial, testimony was given which proved that the C. Sand & Gravel Co. paid Ringer a certain rate per yard per mile, which originally amounted to $3.60 per truckload. Monday was paid by Ringer on the basis of one-third of the revenue he obtained from the C. Sand & Gravel Co.

However, the testimony showed further that officials of the C. Sand & Gravel Co. had no direct control over Monday. Although the lower court held that the sand and gravel firm must pay $14,000 compensation to Monday, the higher court reversed the verdict holding:

"C. Sand & Gravel Company's superintendent naturally had the authority to direct claimant (Monday) where to obtain the truck loads of gravel he hauled, and where to unload them; but such control is usually regarded as having to do merely with the result, or progress of the work."

Smell of Liquor

A higher court held that if the smell of liquor is on the breath of a person who has an automobile accident, this testimony may be considered by the jury when rendering its verdict.

In *Zebell v. Krall*, 83 N. W. (2d) 288, it was shown that a man named Zebell, after leaving a tavern in his car, collided with an automobile making a left turn on a highway. Zebell contended that he was not responsible for the collision because the driver of the forward vehicle did not signal his in-

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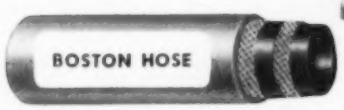

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tentions to make a left turn. He further testified that he had consumed ¾ oz. of whiskey and a glass of beer.

The jury held Zebell responsible for the collision, and the higher court approved the verdict, saying:

"The court properly cautioned the jury that the evidence in regard to plaintiff's (Zebell's) drinking would have to be such as to show that plaintiff (Zebell) was under the influence of liquor to the extent that it impaired his driving."

For comparison, see *Shannon v. Township of Jamestown,* 232 N. W. 371. There was testimony tending to show the driver of a car was driving rapidly over fresh gravel on a comparatively narrow country road. Evidence also tended to show the odor of intoxicating liquor on his breath immediately after the accident. The court said:

"The extent to which the use of intoxicating liquors, if found by the jury to have been indulged in, contributed to the accident, if at all, was for the jury."

Must Prove Damages

A higher court rendered an unusual decision holding that a nonmetallic manufacturing company need not stop operation of its plant, although nearby property owners are suffering damages and inconveniences from its operation.

For example, see *T. Lime Company v. Hindman,* 300 S. W. (2d) 112. Twelve automobile dealers sued the T. Lime Co. for heavy damages. These car dealers contended that their business was being importantly affected by operations of a nearby plant of the T. Lime Co., which deposited lime, dust, and other foreign matter on the displayed automobiles.

The higher court held that the T. Lime Co. need not stop operation of its plant, and said:

"The judgment of the lower court in favor of the limestone products company is affirmed, the judgment denying the writ of injunction is affirmed, the judgment in favor of appellees (automobile dealers) in all other respects is reversed and remanded."

This judgment was rendered although Hindman, Owen & Owen (automobile dealers) had been caused to expend at least $4,940 for the removal of lime, dust, and other foreign matter deposited on their cars by the operation of the lime plant. Also, the firm of Saunders & Saunders alleged at least $2,010 damages as the result of diminished market value of automobiles in their stock caused by the depositing of foreign matter. Other automobile dealers testified similarly.

Humiliation or Disappointment

According to a recent higher court decision, a disappointed or humiliated purchaser of nonmetallic materials cannot recover damages based on assertions that he was ill treated.

For example, in *Pettaway v. Commercial,* 306 Pac. (2d) 219, it was shown that a seller signed a contract to furnish a man named Pettaway with certain materials.

When the seller refused to go through with the deal and deliver the materials, Pettaway sued for heavy damages on the basis of his "disappointment, mental anguish, loss of sleep, humiliation, and damages to his reputation."

The higher court clearly refused

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that's why Marquette Cement Mfg. Co. specifies Athey-Cat Haulers!

Five Athey-Cat Haulers keep the big Marquette Cement, Superior, Ohio, plant supplied with limestone. The units are Athey PD20 Side Dump Trailers, each hauling 22 cu. yd. capacity loads. This is rugged country with deep cuts, sharp turns and long hauls. That's where the flexibility, agility, speed and big production of these Athey-Cat units pay off. They hit 32.1 MPH on the haul — dump in seconds at the crusher — and with their big, wide bodies, are easy and fast to shovel load.

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to hold the seller liable for damages based on Pettaway's assertions.

Tax Distinctions

There are several classifications of tax laws, which include sales tax, use tax, excise tax, personal property tax, etc.

A sales tax law is applicable exclusively to the sale of merchandise, whereas a use tax law involves the utilization of purchased merchandise. Generally, merchandise used by manufacturers in processing salable merchandise, packing their products, etc., are not subject to a state's use tax.

For example, in *Alabama Company v. State*, 42 So. (2d) 796, the testimony showed that a manufacturing company buys cans and boxes and cartons which it furnishes to purchasers who sell its products at retail. In other words, the unit sold by the company to jobbers, dealers, and wholesalers for resale of its products consists of containers in which the products are packed.

The state sued the company to collect use tax on the value of the containers in which it packed its product. The suit involved several thousand dollars.

The higher court held that the company need not pay "use" tax to the state, and said:

"As it is not denied that the fiber boxes are 'furnished,' they seem to us to qualify for exclusion from the tax."

Since the containers merely are furnished for the convenience of packing the products, the court held that such containers are not subject to a use state tax. This is so although the manufacturer adds the cost of the containers to the selling price of the products.

For comparison, see *France Company v. Evatt*, 55 N. E. (2d) 652. Here it was shown that a state's sales tax law provides very clearly that where "the purpose of the consumer" is to use the subject of the sale in the "production or processing of tangible personal property," no sales tax shall be collected.

A company engaged in the business of crushing and selling stone purchased certain equipment, including shovels, loaders, etc., for the transportation of its product.

In subsequent litigation, the higher court held that the company need not pay the state sales tax on this purchased equipment, saying:

"Sales of tangible personal property used and consumed in operations consisting of transporting crushed stone products are sales of personal property used in the production by processing of tangible personal property for sale . . ."

Notwithstanding this decision, a recent higher court held that a state can collect a sales tax on machinery and equipment used to transport materials used in production of tangible chattels and products.

For example, in *T. Asphalt Corporation v. Glander*, 99 N. E. (2d) 366, it was shown that a corporation is in the business of producing asphaltic concrete, known as blacktop. The company uses a portable asphalt plant which is moved from job-site to job-site. In connection with this portable plant, the company uses a crane or power shovel.

The corporation purchased a crane or power shovel for the sum of $17,500. The State Tax Commissioner made a state sales tax assessment against the corporation

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For dump, mixer, or flat-bed truck service in highway and off-highway hauling, Mack large-capacity trucks and tractors will do your toughest, most demanding jobs more efficiently, more economically, and more profitably. More, Mack offers you the widest selection of heavy-duty units with gross vehicle weights ranging from 25,000 to 65,000 lbs. and tractors for carry-all trailer service up to 175,000 lbs. G.C.W.

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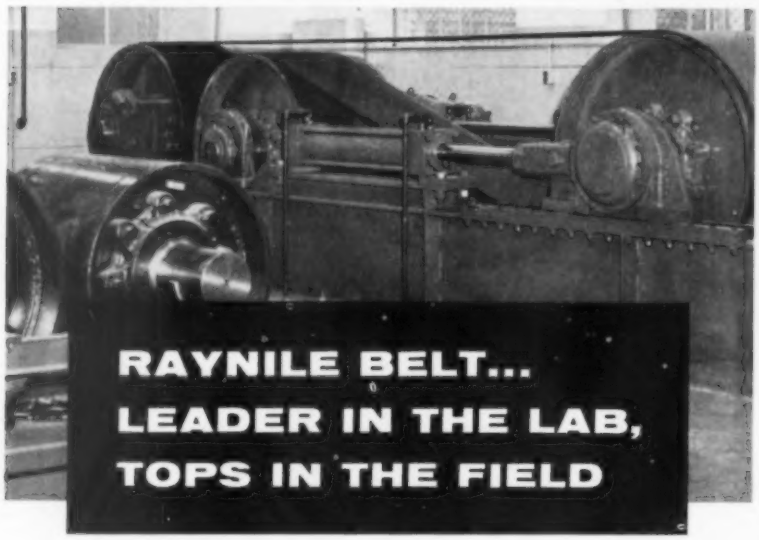

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Let the many years of Hewitt-Robins experience, engineering, and research in developing the best in conveyor belting benefit your operation. To find out how H-R products and services can help you, consult your classified telephone directory for the nearest H-R representative, or contact Hewitt-Robins, Stamford, Connecticut.

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for the crane and a penalty of $78.75. The legal counsel for the corporation contended that the state could not collect the sales tax on the crane because the equipment is used directly in the production of tangible personal property.

The higher court refused to agree with this contention, and ordered the corporation to pay the sales tax, saying:

"It is difficult to conceive of products, the processing of which does not require the transportation of ingredients to the place of processing as well as transportation of the finished products from the place of processing to customers or places of use. The fact that certain items of tangible personal property are required by law in operations does not in and of itself exempt or except from taxation the sale or use of such items for such purpose."

Tax on Movables

Considerable discussion has arisen from time to time over the legal question: Can a state tax movable property, as motor trucks, belonging to an individual, firm, or corporation whose principal place of business is located outside the state?

A recent leading higher court held that property, chattels, motor vehicles, cars, boats, and the like sent into a state must bear its fair share of the burden of taxation, although it is only temporarily located within the taxing state.

For example, in *District of Columbia v. S. Sand and Gravel Corporation,* 184 Fed. (2d) 987, the testimony showed facts that a corporation purchased tugs, scows, and launches which are used for the transportation of sand and gravel from Virginia to purchasers in the District of Columbia.

In subsequent litigation the higher court held that the District of Columbia could tax the equipment, vessels, etc., on a fair apportionment valuation based on the number of days each year the vessels transported sand and gravel to storage places in the District. This court said:

"Permanency in the sense that it must be fixed like real property is not essential to the establishment of a taxable situs for personal property."

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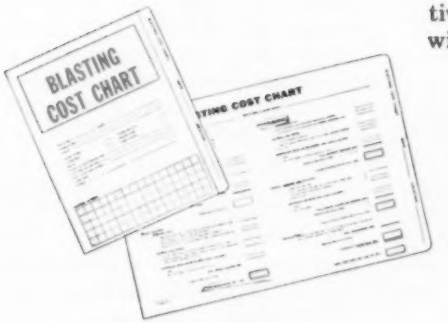

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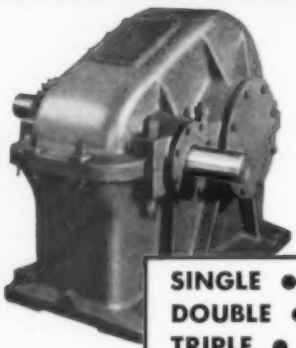

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Manufacturers' News

With the recent appointment of D. HAROLD JOHNSON as manager of multiwall sales, the Containerboard and Kraft Paper Division of the Continental Can Company, New York, N. Y., set into motion its plans to enter the multiwall bag field.

Mr. Johnson will be responsible for the co-ordination of the manufacturing and sales promotion of the division's new multiwall line. He was formerly associated with the Virginia — Carolina Chemical Corporation as manager of the Bag Division.

D. H. Johnson

A. L. Labbe

ARMAND L. LABBE has joined the staff of the Industrial Fabrics Division of the Albany Felt Company, Albany, N. Y., as industrial consultant on problems concerning smoke and dust control and other phases of dry filtration.

Mr. Labbe recently retired from his former position of metallurgist with the American Smelting and Refining Company, after serving with that firm for 45 years. His new position with Albany Felt will involve assignments to firms in the fields of mining and quarrying and allied industries to help solve existing filtration problems.

WILLIAM GUY has been named assistant chief engineer of the Harris Calorific Company, Cleveland, Ohio. He will be responsible for experimental engineering projects and new product development on the company's line of welding and cutting torches, regulators, and accessories.

Lukens Steel Company, Coatesville, Pa., announces plans to market under its own name a complete line of welding electrodes precisely suited to Lukens' entire range of alloy, alloy-clad, and carbon steel plates.

Beginning July 1, the new line of electrodes will be marketed from the company's Chicago, Ill., and Coatesville offices. National distribution is planned shortly thereafter.

GERALD A. TAMBLYN, a veteran of 18 years' experience in the field of bulk materials handling, has been named sales manager of the new industrial tractor shovel line, the Y-18, which has been introduced by the Yale Materials Handling Division, The Yale & Towne Manufacturing Co., Philadelphia, Pa.

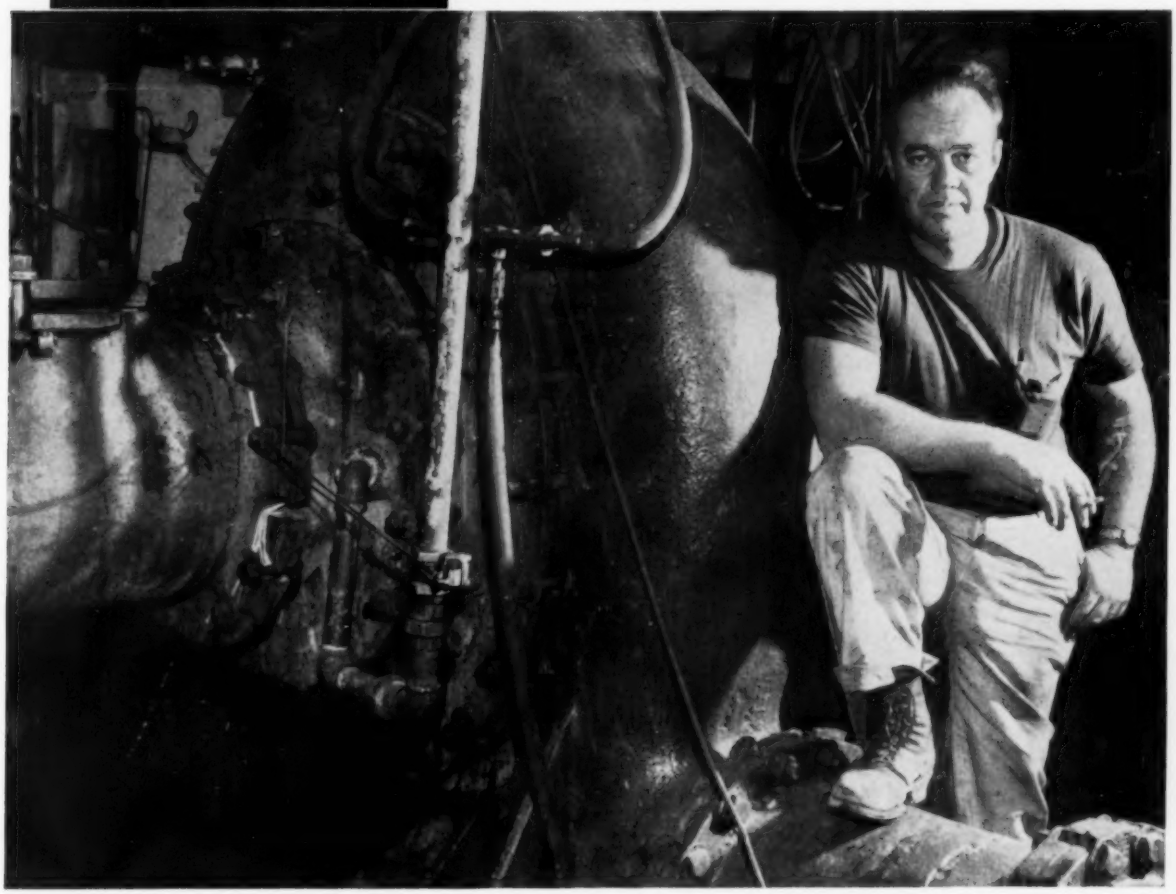
FRED O. REEDY, 66, president of the Kennedy-Van Saun Manufacturing and Engineering Corporation, New York, N. Y., died of a heart attack on February 24 in Danville, Pa.

Mr. Reedy joined Kennedy-Van Saun in 1920 as production engineer. He became a vice-president in 1942, and president in 1955.

Equipment distributors and their sales representatives from the southeastern states attended a series of meetings conducted by the Sales Training Department of the LeTourneau-Westinghouse Company, Peoria, Ill., April 7-9. Following sessions held in Atlanta during the first two days, the group traveled to the company's plant at Toccoa, Ga., to study the latest advances in equipment design and manufacture.

The program also covered an analysis of current conditions in the various industries served by LeT-WesCo and its distributors, new equipment application ideas in the light of recent developments, and merchandising techniques.

Amsco pump application file —Portland, Oregon



"Amsco HC-250 pump liners outlast any we previously used by 3 to 1..."

Says Mr. Arthur A. Riedel, Jr., President and General Manager of the Willamette Tug and Barge Co., Portland, Oregon, which engages in all types of marine construction including suction dredging, bucket dredging, bridge, dock and levee construction, towing, barging, and the processing of sand, gravel and ready-mixed concrete.

"We'd get about two weeks life out of our old suction liners. With the abrasion resistance of Amsco HC-250 we get at least six weeks.

"We are presently channel-dredging sand and gravel at Hood River, Ore. with this 16-inch Amsco. Last year we dredged 3½ million cubic yards. A pump shell lasts about 600,000 yards before we rebuild it (by welding). The bearings stand up a year and a half.

"The pump is three years old. It has a GM diesel drive, flexible coupling. Our dredge has both plain suction and a rotary cutter. The lift varies up to 30 feet, the longest pipeline the pump has been on was 6200 feet.

"We're happy with this pump, but what we like best is the service, the fast parts delivery Amsco gives us. We depend on it."

Amsco® Dredge Pump standard sizes range from 6" to 20" discharge openings. Larger sizes are also available. An Amsco pump engineer will be glad to discuss your requirements, or write for Bulletin 1052P containing full information and specifications on the Amsco line.

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AMSCO American Manganese Steel Division
Chicago Heights, Illinois

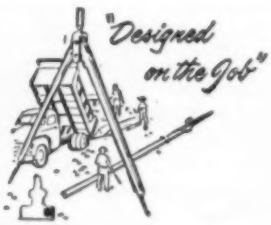
BETTER CONTROL with MARION'S NEW SPOOL-TYPE VALVE

designed for use with standard-duty hoists

MARION'S new pump with spool-type valve gives far superior control for all dumping and spreading operations. It can readily be adapted for cable control when desired. The new pump is used with both offset manifold and hose adaptation. It is interchangeable with the present-type standard duty pump. Get all the facts about it and about extra performance-proved MARION dump bodies and hoists from your distributor . . . or write direct today.

MARION
BODIES AND HOISTS

MARION METAL PRODUCTS CO.
MARION, OHIO, U.S.A.



Enter 170 on card, page 101

Napco Industries, Inc., Minneapolis, Minn., has appointed R. J. RAYBACK sales manager for the new four-wheel-drive, four-wheel-steer Napco *Crab* tractor. At the present time, Mr. Rayback is engaged in developing a distributor organization for the *Crab*.

Mr. Rayback was formerly associated with Ottawa Steel, where he occupied several key sales and executive positions.

R. J. Rayback

A. D. Marks

The Hercules Motors Corporation, Canton, Ohio, has named ARTHUR D. MARKS director of sales. Mr. Marks has been manager of Hercules' foreign division since 1945.

Three new district managers have been appointed for the Industrial Wholesaler Division of The Dayton Rubber Company, Dayton, Ohio.

W. F. MONAHAN will cover the New York State area; THOMAS DUNLAP will serve Maryland, Delaware, eastern Pennsylvania, and Washington, D. C.; and HARRY DAY JR. will cover eastern Texas and Arkansas.

FRANK E. PRINGLE has been named general sales manager of the Howe Scale Company, Rutland, Vt. Mr. Pringle, formerly assistant general sales manager, also becomes a member of the Howe executive committee.

PHIL RAWDING has been made southeastern sales supervisor for the Mining and Construction Division of the Vascoloy-Ramet Corporation, Waukegan, Ill. Mr. Rawding will supervise the newly-established branch office at Asheville, N. C.

Maintenance Tips from Dino, the Sinclair Dinosaur

Rugged Oil for Rugged Duty

Tackling tough jobs and getting 'em done on time demands a lot from your equipment. Sinclair Super TENOL® Motor Oil will help keep your equipment working on the job longer – and more profitably for you.

This superior lubricant, a blend of high viscosity index base oils and selected additives, provides maximum protection against varnish, sludge, rust and acid corrosion. It guards your equipment against the rugged effects of high temperatures and continuous stop-and-go operation.

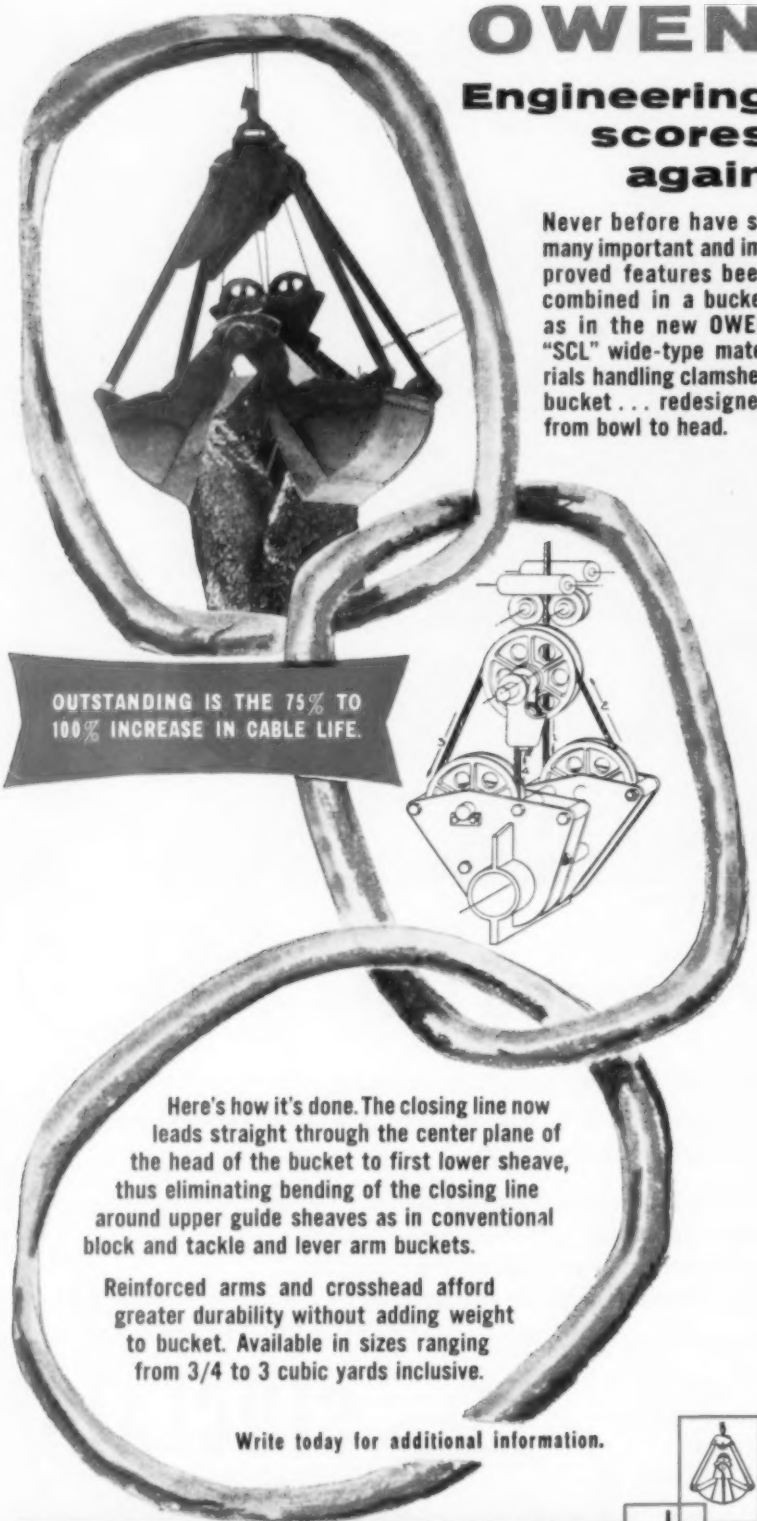
Refill now. There's a type of Sinclair TENOL Motor Oil to meet the requirements of your equipment. Contact your local Sinclair Representative for further information, or write for free literature to Sinclair Refining Company, Technical Service Division, 600 Fifth Ave., New York 20, N. Y. *There's no obligation.*

SINCLAIR
SUPER TENOL®

OWEN

Engineering scores again

Never before have so many important and improved features been combined in a bucket as in the new OWEN "SCL" wide-type materials handling clamshell bucket . . . redesigned from bowl to head.



OUTSTANDING IS THE 75% TO 100% INCREASE IN CABLE LIFE.

Here's how it's done. The closing line now leads straight through the center plane of the head of the bucket to first lower sheave, thus eliminating bending of the closing line around upper guide sheaves as in conventional block and tackle and lever arm buckets.

Reinforced arms and crosshead afford greater durability without adding weight to bucket. Available in sizes ranging from 3/4 to 3 cubic yards inclusive.

Write today for additional information.

The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

Enter 172 on card, page 101

DEANE F. WICKS has been appointed sales manager for the Raymond Bag Corporation, Middletown, Ohio. Mr. Wicks was previously Eastern District sales manager for Raymond. He joined the Albemarle Paper Manufacturing Company, now Raymond's parent firm, in 1949.

D. F. Wicks

T. H. Bacon

Succeeding Mr. Wicks as Eastern District sales manager is T. H. BACON. Mr. Bacon has been connected with the Albemarle Paper Manufacturing Company and the Raymond Bag Corporation for the last several years. He will make his headquarters in New York City.

Cummins Engine Company, Inc., Columbus, Ind., has purchased Atlas Crankshaft, Inc., Fostoria, Ohio. The Fostoria concern machines crankshafts for diesel and gasoline engines, and various types of compressors.

According to Cummins' plans, the Fostoria facilities will be operated separately from its Columbus operations.

The Quaker Rubber Division, H. K. Porter Company, Inc., Philadelphia, Pa., announces two new distributors in the state of Texas.

The F. W. Heitmann Company, Houston, will be Quaker's distributor in the Harris County area. The Jess McNeel Machinery Corporation, San Antonio, will cover the San Antonio, Austin, West Texas, and Rio Grande Valley areas.

T. S. PACER has been promoted from vice-president to executive vice-president of the Illinois Gear & Machine Company, Chicago, Ill.

Enter 173 on card, page 101 →

Thermoid Conveyor Belting ...pays on the long haul!

Here's belting with real stamina! Belt carcass and cover are welded together by Thermoid's exclusive impregnation process. With Thermoid's specially woven, finest quality reinforcement it troughs easily, withstands shock loading as no ordinary belt can—yet it is flexible enough to avoid internal heat build-up. The results of this unusual combination are years and years of trouble-free service on the toughest jobs.

There's a Thermoid Conveyor Belt made expressly for your materials handling requirements. For example: *Thermoid HT* for extremely abrasive materials such as quartz ores, trap rock and coal . . . *Thermoid A* for highly abrasive materials such as slag, lime, rock, ore, ashes, hot cement and crushed stone . . . *Thermoid C* for moderate abrasives such as sand, loam, gravel.

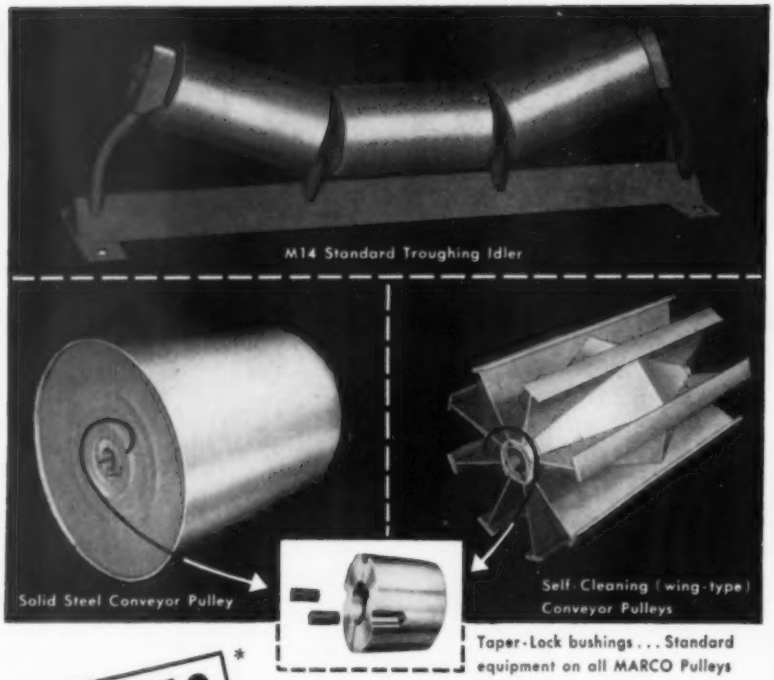
Your Thermoid distributor will help you select the conveyor belt that's exactly right for your needs.

Cut costs with Thermoid Multi V-Belts . . .

. . . and Thermoid Hose.

Thermoid

Thermoid Company • Trenton, N.J.



Taper-Lock bushings . . . Standard equipment on all MARCO Pulleys

MARCO*

The Complete Line of Modern Conveyor Accessories . . .

Engineered to Reduce Your Material Handling Costs

Belt Conveyor Idlers — You'll find MARCO engineering makes a big difference in idlers. MARCO idlers are equipped with precision ground, ball bearings. These bearings are designed specifically for conveyor idlers and at 300 revolutions per minute they will carry loads up to 860 lbs. per bearing. The result,— longer service life and lower power requirements.

Each bearing is pre-lubricated and effectively sealed to eliminate field lubrication and reduce maintenance.

The frame is stronger because of its all steel construction. Material build up is kept at a minimum due to the self-shedding base.

Idlers fit any conveyor frame and are available in many types and sizes. *Ask for Bulletin ID-2.*

MARCO Solid Steel Pulleys — Advantages of MARCO pulleys include: machined faces and Taper-Lock bushings, at a competitive price. Both the belt and pulley last longer because the entire pulley face is machined to insure concentricity with the bore. The Taper-Lock bushings provide the quickest, easiest way to mount or demount pulleys.

Self-Cleaning (wing-type) Pulleys — These self-cleaning pulleys pay for themselves many times in longer belt life when installed in elevator boot sections, conveyor tail sections and gravity take up assemblies. These pulleys are of *all steel*, jig-welded construction and also combine the advantages of machined faces and Taper-Lock bushings.

Whenever you need conveyor accessories — turn first to MARCO.

MARCO idlers and both solid steel and self-cleaning pulleys are available in a wide range of sizes for prompt delivery to meet *your* requirements.

You can save time, trouble and dollars because . . . MARCO specializes in designing and manufacturing conveyors and accessories. Get the facts from your MARCO Distributor or write E. F. Marsh Engineering Co., St. Louis 10, Mo.

MARCO*

Engineered MARCO* Products:

Tubular Frame Belt Conveyors • Conveyor Idlers
Solid Steel and Self-Cleaning Steel Pulleys • Bucket Elevators
Control Gates • Feeders • Bins

*Trademark Registered

Enter 174 on card, page 101

WILLIAM J. JENKINS has been appointed northeastern representative for the bucket division of the Erie Strayer Company, Erie, Pa. From his headquarters in New York, N. Y., Mr. Jenkins will serve the territory extending along the eastern seaboard from the Canadian border to North Carolina.

W. J. Jenkins

R. J. Mills

RICHARD J. MILLS has been promoted to the position of general sales manager of the American Hoist & Derrick Company, St. Paul, Minn.

Mr. Mills has been associated with American Hoist in various capacities for the last 12 years. Prior to his recent promotion, he served as regional manager of the company's Eastern District.

The Yale & Towne Manufacturing Company has appointed two new distributors for its *Trojan* line of tractor shovels.

The Spartan Equipment Company, Charlotte, N. C., will be the *Trojan* distributor in North Carolina. The Craig Taylor Equipment & Supply Company, Anchorage, Alaska, will handle the *Trojan* tractor shovels in the Territory of Alaska.

A new bearing warehouse was recently opened in Atlanta, Ga., by the Distributor Division of The Torrington Company, Torrington, Conn., to service the states of Tennessee, North and South Carolina, Georgia, Alabama, and Florida.

Wheelabrator Corporation, Mishawaka, Ind., manufacturer of bag type dust collectors and airless blast cleaning equipment, announces the addition of a wet dust collector to its product line.

A big promise—the *multiwall of TOMORROW!* But rigorous tests, both in laboratory and actual use, show that Bemis Multiwalls made with the revolutionary new extensible kraft offer the biggest multiwall development in years.

Testing still goes on. We can document more and more of the qualities of Bemis extensible bags . . . and we are learning more about which industries they will serve beneficially.

(Normally, an announcement of this kind would be held up until all tests are completed, but this development is so important, and final reports are so near, that you should be alerted.)

We can say positively, though . . . *the adaptability of Bemis Extensible Multiwalls for the cement industry has been definitely proved. They will give you superior service, probably at a cost no greater than your present bag cost, maybe at a saving.*

You will certainly want to get the *complete* story about Extensible Multiwalls from your Bemis Man. And you will want to order a trial quantity—possibly 5,000 bags as a starter—in an early shipment of Bemis Multiwalls. Supplies will be somewhat limited until full production of the new paper develops. Meanwhile, all Bemis customers will, of course, get an "even shake."

You will be well advised, though, to get acquainted with Bemis Extensible Multiwalls as soon as possible . . . to learn how they fit into *your* operation.

WHAT IS EXTENSIBLE KRAFT PAPER?

It is sturdy kraft that is given a special mechanical treatment, during manufacture, to provide special qualities that are particularly desirable in Multiwall bags. This paper is made by West Virginia Pulp and Paper Company under the trade name "Clupak." "Extensible" means that it has a definite, though almost imperceptible, "stretch" *in both directions*. The "stretch" provides the qualities that make for better multiwall bags. (Note—This is *not* a *creped* paper.)

WHAT ARE THESE SPECIAL QUALITIES?

1. Because of the "stretch," it is stronger . . . more resistant to shock and breakage. Consequently, a lighter construction will provide an equally strong bag. (Paper weight can, in some cases, be reduced 20% or more without reducing strength.)

2. Although perfectly smooth to the touch, it has a "soft hand" and is easier to hold and handle.

3. Easier on the workman's hands.

4. Better stacking and storage, without slipping.

5. It gives added resistance to scuffing and abrasion.

Bemis

General Offices—408 Pine St., St. Louis 2.
Sales Offices in Principal Cities

C. F. Sweeney

W. B. Severe

CHARLES F. SWEENEY has been assigned district representative for the Indiana-Ohio territory by the Link-Belt Speeder Corporation, Chicago, Ill., succeeding REX A. SMITH, who has been named manager of the Sales Promotion and Training section.

Mr. Sweeney was previously district representative for the Canadian provinces of Alberta, Saskatchewan, and Manitoba, and the seven Rocky Mountain and Plains states in the United States. He is replaced by W. B. SEVERE, who was formerly field service representative in the Pacific Northwest.

Allis-Chalmers Manufacturing Company, Milwaukee, Wis., plans to construct engineering, development, and research laboratories on a 300 acre site in Greendale, Wis.

The initial building when completed will have 23,000 sq. ft. of space for laboratories where research, scientific studies, and analyses will be conducted.

Among the projects to be carried out by the laboratories will be design, construction and testing models, mockups and prototypes of nuclear reactors and associated equipment.

The J. I. Case Company, Racine, Wis., has appointed CARL VON LINSOWE chief engineer of its Crawler Tractor Works in Churubusco, Ind. Mr. von Linsowe succeeds T. A. HALLER, who was transferred to Racine to direct Case's newly-organized Engineering Research and Development Center.

Mr. von Linsowe recently joined the Case organization after 17 years with General Motors.

J. P. CULLEN has been named manager of clamshell bucket sales for the Blaw-Knox Company, Pittsburgh, Pa., replacing ARNOLD HOOPER, who has retired.

Joining Blaw-Knox in 1938, Mr. Cullen became eastern manager of clamshell bucket sales, servicing the New York and Philadelphia areas. Mr. Cullen transferred to the West Coast in 1951, where he managed all Blaw-Knox Equipment and Construction Equipment Division sales.

J. P. Cullen

P. J. Foley

Directors of the Worthington Corporation, Harrison, N. J., have announced the appointment of PAUL J. FOLEY to the newly-created position of general manager—resale for the Marketing Division. He formerly served as manager of sales for Worthington's Plainfield, N. J., division.

PAUL GALTON has been appointed manager of sales, replacing Mr. Foley.

Mr. Galton joined Worthington in 1953 as manager of positioning equipment sales, serving in this capacity until his recent promotion.

KENNETH J. BUTLER has been appointed assistant sales manager of the Springs and Formed Wire Department of the Wickwire Spencer Steel Division of The Colorado Fuel and Iron Corporation, Denver, Colo.

Prior to his recent appointment, Mr. Butler served as a general line salesman in the Boston District area.

CHARLES MCKENNA has been appointed sales representative for the Leschen Wire Rope Division, H. K. Porter Company, Inc., New York, N. Y. His territory will encompass the New England states and upper New York State.

TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

• Open Gears, Dipper Sticks, Cams • Enclosed Gear Cases • Wire Rope and Cable
• Hydraulic Units, Torque Converters • Roller, Ball, and Sleeve Bearings • Speed Reducers

Est. 1893

THE WHITMORE MANUFACTURING CO.

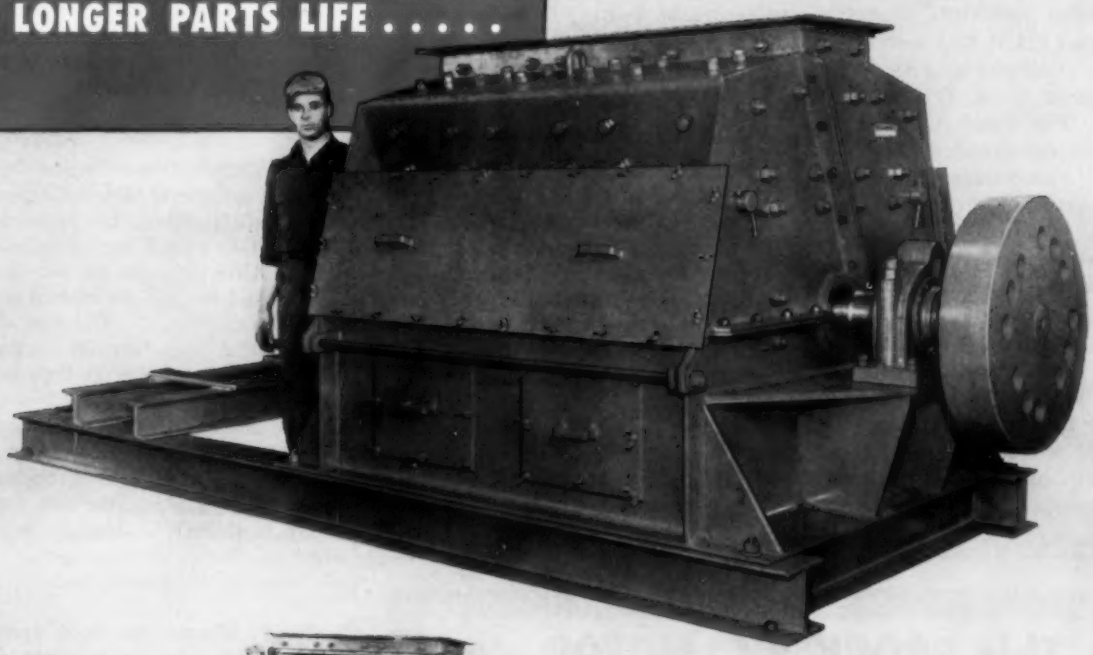
LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

Enter 176 on card, page 101

NEW DUAL "2-POINT" ADJUSTMENT INSURES MORE UNIFORM GRINDING, LONGER PARTS LIFE . . . . .

WILLIAMS *Reversible* HAMMER MILLS



Williams Reversible Hammer Mill with cover open.
Note these features:

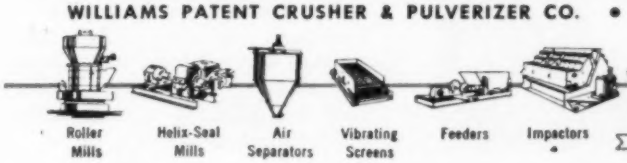
- Super-strong reinforced steel plate frame
- Renewable wear-resistant manganese steel liners
- Heavy duty oversize forged steel rotor shaft
- Anti-friction self-aligning roller bearings in dust-tight housings
- Complete accessibility to interior for quick parts changing

It's another Williams "first"—features not available in other hammer mills—that now makes it possible to maintain the original close clearances of *both* grinding plates *AND* cage sections against the rotating hammers. This easy-to-make "2-point" adjustment, in the most critical grinding area inside the hammer mill, gives absolute assurance of consistently uniform product quality.

In addition to the advantages of the Dual "2-Point" Adjustment, a Williams Reversible Hammer Mill substantially lowers upkeep expense by cutting hammer cost. Hammers can be operated in one direction today and another tomorrow simply by installing a simple reversing switch on the driving motor. Manual reversing of hammers no longer necessary. Grate bars also last longer. The double set of reversible manganese breaker plates, which last twice as long as other types, give four times the service! Maintenance and downtime are cut 50% or more.

Get all the facts about the hammer mill with *ALL* the top features.

WILLIAMS PATENT CRUSHER & PULVERIZER CO. • 802 ST. LOUIS AVE. • ST. LOUIS 6, MO.



WILLIAMS
CRUSHERS GRINDERS SHREDDERS
Oldest and Largest Manufacturers of Hammer Mills in the World

BOYD S. OBERLINK, a director of the Allis-Chalmers Manufacturing Company, Milwaukee, Wis., and vice-president in charge of the Tractor Group, was elected president of the Construction Industry Manufacturers Association at the annual meeting held in January. Mr. Oberlink was previously first vice-president of the organization, and has served as a director.

Other C.I.M.A. officers elected to serve a one-year term are: first vice-president, G. A. Gilbertson, president, The Frank G. Hough Co.; second vice-president, Henry Barnhart, vice-president and general manager, Construction Equipment Div., Baldwin - Lima - Hamilton Corp.; and treasurer, Ray McLean, president, The Jaeger Machine Co.

R. J. PLAS, an industry engineer for Cement Plant Operations of the Western Precipitation Corporation, Los Angeles, Calif., was recently elected chairman of the Air Pollution Control Association's Electrostatic Precipitation Group.

J. M. Knox

Dr. H. J. White

The appointment of JAMES M. KNOX as executive vice-president and treasurer and DR. H. J. WHITE as secretary of Research-Cottrell, Inc., Bound Brook, N. J., has been announced.

Mr. Knox was formerly assistant director and business manager of the Brookhaven National Laboratory. Dr. White continues to serve as director of research and development at Research-Cottrell, in addition to his new duties as secretary.

DAVID R. STRAUB has been appointed manager of the Minerals Division of John F. Meissner Engineers, Inc., Chicago, Ill.

The Heppenstall Company, New Brighton, Pa., has signed a licensing agreement with Wilhelm Scheidt, of Kettwig (Ruhr), in West Germany, a leading European manufacturer of materials handling equipment.

Under the terms of the agreement, Scheidt will manufacture and distribute Heppenstall materials handling equipment in West Germany. In turn, the Heppenstall Company will be the exclusive distributor of Scheidt products in the United States and Canada.

The Detroit Diesel Engine Division of the General Motors Corporation, Detroit, Mich., has appointed Hicklin-GM Diesel, Inc., distributor of the Division's line of two-cycle diesels in Iowa and the eastern two-thirds of Nebraska. The new distributorship also includes sections of Illinois and South Dakota bordering on Iowa.

The distributor is a new corporation formed for the sale and service of Detroit Diesel's line of engines, exclusively. Heading the new company is Robert V. Hicklin, president.

N. F. MOODY has been named Philadelphia District manager for the Air Reduction Sales Company, New York, N. Y. Formerly Boston District manager, Mr. Moody replaces E. B. Walker, who is retiring after almost 34 years of service.

H. F. Colt Jr., formerly assistant district manager, Philadelphia, succeeds Mr. Moody as Boston District manager.

Promotion of ROBERT L. WILLIAMS to advertising manager of Gardner-Denver Company, Quincy, Ill., has been announced. Mr. Williams was formerly assistant advertising manager for the company's industrial products division.

LEE E. COULTER has been appointed assistant to the president of the American Hoist & Derrick Company, St. Paul, Minn. Mr. Coulter, who has been with American Hoist for 29 years, will continue his duties as assistant secretary of the company.

Peak performance in all climates—humid or arid—high or low temperatures. You profit in any weather with this husky, totally enclosed, fan cooled BROOK MOTOR. Yet, it actually costs less than an ordinary, light duty motor. Slip Ring or Squirrel Cage type, 1 to 600 H.P., ready for shipment from warehouse stocks in major industrial centers. Send for brochure and name of your local Brook Dealer.

world's most respected motor

BROOK MOTOR CORPORATION

3553 W. PETERSON AVE., CHICAGO 45, ILLINOIS

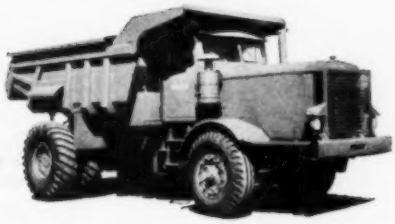
SINCE 1904

BROOK MOTOR CORPORATION

Enter 178 on card, page 101

Allison Torqmatic drive now in GMC trucks

In this–



More than 10 years of the most rugged hauling—in huge off-the-road equipment like this—have proved the mettle of Allison Transmissions.

–and this–

Combat veterans of two wars, Allison Transmissions have put the "drive" in 40,000 Armed Services vehicles since '48. One of them is ONTOS, shown above.

No other type automatic drive–in any make truck–can offer the proved dependability and durability of Allison Torqmatic. And it's now available–optional at extra cost–in GMC Money-Maker Trucks.

You get a lot more than ruggedness, too: There's the power-train protection of a torque converter–the fuel economy of a direct-drive lockup–the super-efficiency of *full-torque* shifting.

And that's only part of the story. For full details on all the Allison Torqmatic advantages –available in GMC Money-Makers throughout the 19,500-46,000 GVW range–see your GMC dealer!

GMC TRUCK & COACH–*A General Motors Division*

–and now in GMC's like this–

ALLISON TORQMATIC'S SIX FORWARD SPEEDS give you just the amount of drive you need—when you need it—for the type hauling you're doing. And the built-in Hydraulic Retarder gives you "engine braking" that's a real brake-saver.

GMC Money-Makers available in models from ½ to 45 tons

GMC–America's Ablest Trucks

ROBERT B. MACK has been named product manager of mixing and drying equipment for The Patterson Foundry and Machine Company, East Liverpool, Ohio. WILLIAM C. STURGEON succeeds Mr. Mack as manager of Customer Service.

R. B. Mack

W. C. Sturgeon

Mr. Mack has been associated with Patterson since 1940, holding numerous responsible positions in the Engineering and Sales Departments.

Mr. Sturgeon, who has been with Patterson since 1954, has served in various sales, engineering and product application assignments.

RICHARD F. STRAW, vice-president—sales of the Howe Scale Company, Rutland, Vt., has been transferred to Atlanta, Ga., to supervise sales in the Florida, Alabama, Georgia, South Carolina, and Tennessee markets.

Mr. Straw joined Howe Scale at Rutland in 1943, in charge of sales promotion and development. He was made a vice-president in 1944.

BURTON SCHELLENBACH has joined the H. K. Porter Company, Inc., New York, N. Y., as vice-president—sales. Mr. Schellenbach will make his headquarters in the company's Pittsburgh, Pa., offices.

A new 16 mm. sound, color film entitled *Run Crane, Run* is available from The Threw Shovel Company, Lorain, Ohio. With a running time of 25 minutes, the film highlights design and operating features of the newest *Lorain* shovel-crane, the 7-ton, ⅜-cu. yd., self-propelled SP-107.

LARRY J. WEISER has been appointed a district sales representative for the Huber-Warco Company, Marion, Ohio. His territory includes the states of Wisconsin, Missouri, Nebraska, Iowa, South Dakota, North Dakota, Minnesota, the Upper Peninsula of Michigan, southern Illinois, and Manitoba and Saskatchewan, Canada.

L. J. Weiser

E. A. Murray

EDWARD A. MURRAY, formerly sales manager of the Chicago district, has been named assistant vice-president of sales for the American Steel & Wire Corporation, Cleveland, Ohio.

Mr. Murray succeeds M. D. MILLARD, who was recently promoted and transferred to U. S. Steel, Pittsburgh, Pa., as an administrative vice-president.

WILLIAM MCNEIL has been named New York district sales manager for the Jones Machinery Division of Hewitt-Robins, Inc., Stamford, Conn. He will be responsible for the sale of Jones power transmission equipment in the Philadelphia and New York area.

Mr. McNeil was formerly employed as a district sales manager by the Hamilton Rubber Manufacturing Corporation, and as a field representative by the Harnischfeger Corporation.

STAN PETERSON, advertising manager of Transport Trailers, Inc., Cedar Rapids, Iowa, died recently following a brief illness.

ROBERT F. GILL has been appointed national accounts manager for the Multiwall Bag Sales Division, Crown Zellerbach Corporation, San Francisco, Calif.

THE MADSEN MODEL 481 ASPHALT PLANT is ideal for the sand, gravel and crushed stone operator. Check these advantages:

- CLEAN OPERATION ... meets air pollution requirements everywhere.
- QUICK FIELD ERECTION ... factory-matched units stack easily and quickly.
- AUTOMATIC OPERATION ... an optional feature in MADSEN Asphalt Plants.
- FLEXIBILITY ... available in 4000 lb., 5000 lb. and 6000 lb. batch capacities.

Bituminous Mixing is More Profitable with

MADSEN ASPHALT PLANTS

... because MADSEN gives you greater production, up to 2000 tons per day — fast, accurate all air operation — lower maintenance costs — and easier accessibility. Get the facts today — see your MADSEN Distributor or write for Catalog.

MADSEN WORKS
BALDWIN-LIMA-HAMILTON
CONSTRUCTION EQUIPMENT DIVISION

COMPLETE PARTS STOCK AVAILABLE IN LOS ANGELES AND LIMA, OHIO

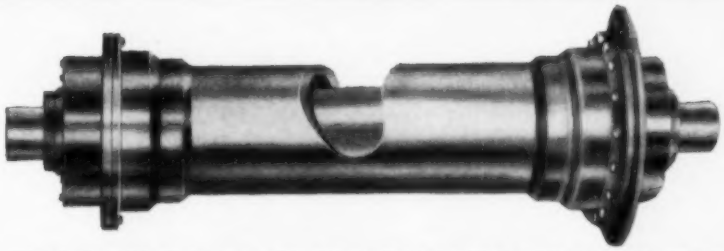
Equipment that Serves

14122 E. ROSECRANS AVE., P.O. BOX 38, LA MIRADA, CALIFORNIA

Enter 180 on card, page 101

"We're mighty glad for this SECO margin of safety... especially when we overload"..

SECO
Twin-Bearing
SCREEN SHAFT



20-30% HEAVIER THAN OTHER 2 BEARING SCREENS

This is a typical comment from SECO *Twin-Bearing* SCREEN users . . .

It's something to think about . . . when you're considering new screens on your job. The shaft assembly is the heart of a vibrating screen and SECO engineers have come up with a new kind of stouthearted shaft construction and performance that is winning acclaim, not only on light duty jobs, but in screening medium weight and heavy materials as well.

Add to this SECO'S oil bath bearing lubrication and greater eccentricity of shaft and you have the key to higher tonnages of more accurately sized materials . . . month after month . . . year after year.

And if it ever should be necessary to remove the shaft, the entire unit may be removed easily and quickly.

Made Only by

SCREEN EQUIPMENT CO., Inc.
Buffalo 26, N. Y.

Makers of Vibrating Screens Exclusively

SECO
Twin-Bearing
SCREENS

SEND FOR NEW BOOKLET TB-21

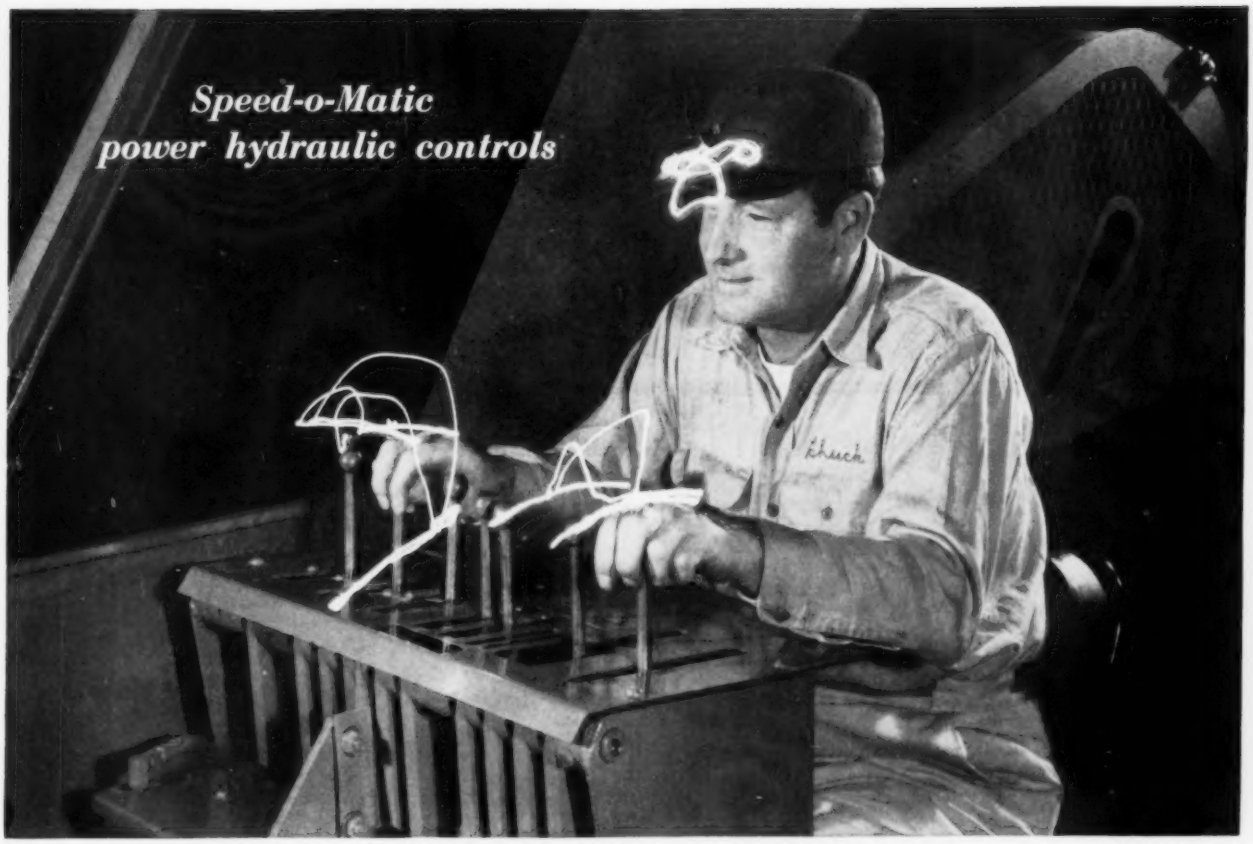
Follow the light lines. They show the "long reach" moves an operator makes with conventional controls to complete a hoe cycle, then shift from swing to travel, steer right and left and shift back from travel to swing. Such "arm's-length" work with slow mechanical or booster systems adds seconds to every move, drains operator strength, cuts end-of-the-shift output.

Time-light cam ra shows!

Which shovel-crane

Speed-o-Matic Power hydraulic controls increase output by decreasing cycle time and reducing operator fatigue

Speed-o-Matic controls bring pinpoint accuracy to dragline, shovel, clam, crane and hoe operations. Design eliminates over 150 mechanical parts from linkage alone. Hydraulically actuated clutches adjust automatically for heat and normal lining wear.



No reaching, no yanking . . . just easy, "keyboard" operation with Speed-o-Matic controls and Independent-Swing-and-Travel when performing the same operations as the hoe with conventional controls. Short-throw levers speed cycles, up output, conserve operator strength. Ask the man who has worked both controls. He'll pick Speed-o-Matic every time!

is producing more ?

Pushing a shovel-crane at its highest limit all shift long is easy with Speed-o-Matic power hydraulic controls.

That's because fingertip controls keep the operator fresh where long-throw levers multiply fatigue. And Speed-o-Matic—standard on all Link-Belt Speeder shovel-cranes—is the original fingertip, flick-of-the-wrist system.

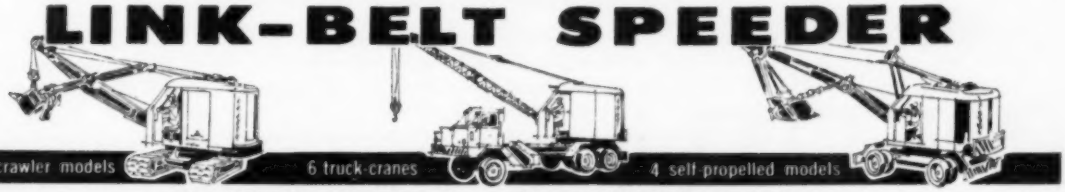
Hydraulic pressure assures the same fast, smooth response *all day*, without adjustments . . . and with perfect feel of the load at every lever position.

And Speed-o-Matic power-hydraulic controls are only one of many Link-Belt Speeder advantages. Others include—

- GREATER USABLE HORSEPOWER
- FULL-FUNCTION DESIGN tailors the machine to the job . . . permits more standard and optional features such as Independent-Swing-and-Travel.
- BONUS CRANE CAPACITY when using long booms at extended radii.

For complete details on why your best shovel-crane investment is a Link-Belt Speeder, contact your distributor or write LINK-BELT SPEEDER CORP., Dept. PQ-458, Cedar Rapids, Iowa, for book 2553. 14,795

LINK-BELT SPEEDER



It's time to compare . . . with a Link-Belt Speeder

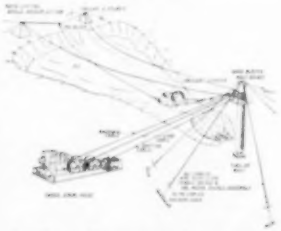
Increase Sand and Gravel Profits–Dig *and Haul* In One Operation With A SAUERMAN MACHINE

Digging and hauling are reduced to one continuous operation by using either a Sauerman DragScraper or Slackline Cableway. By combining the two basic steps of material flow, equipment and labor costs are halved—or even more. A single machine, controlled by one man, does the same job as the multiple equipment required by other methods.

Profitable handling is further assured by a low maintenance cost of 1½ cents per cu. yd. for an average size installation. Larger machines drop this cost still lower. Important, too, is the money saved on power. You pay only the cost of moving the actual digging tool—the Crescent DragScraper or Slackline bucket. Heavy machines with limited handling-to-dead weight capacity are eliminated.

General Handling, Wet or Dry— Pit or Hill Excavation and Reclamation

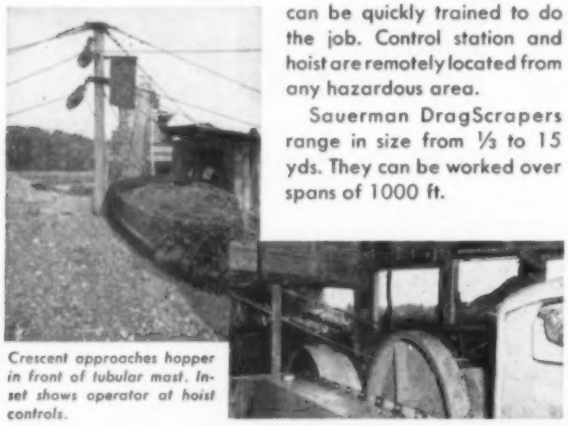
3-yd. DragScraper digs and hauls sand and gravel from pit to plant hopper over a distance of 400 ft.



A DragScraper is recommended for these and similar jobs. This machine handles the toughest digging and operates on a hillside or underwater with as much facility as dry level ground. It hauls directly to hopper, crusher or storage pile.

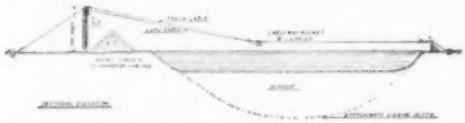
Operation is simple and safe. An inexperienced man can be quickly trained to do the job. Control station and hoist are remotely located from any hazardous area.

Sauerman DragScrapers range in size from ⅓ to 15 yds. They can be worked over spans of 1000 ft.



Crescent approaches hopper in front of tubular mast. Inset shows operator at hoist controls.

Deep Digging, Underwater Recovery— Conveying to High Delivery Point



This 1½-yd. Slackline Cableway is digging in 70 ft. of water and conveying to stockpile on an average haul of 600 ft.

When deep digging is required—or anticipated in the future—a Sauerman Slackline Cableway is the best machine. This powerful excavator can dig 100 ft. or more below water, lift its load and deliver to a high pile up to 1000 ft. away. This surge pile can be held in readiness for plant needs.

The bucket inhauls at high speed and dumps automatically. The dumping point is determined by a stop button on the track cable. Gravity returns the bucket to the digging point completing the fast operating cycle.

Sauerman Slackline Cableways range in size from ⅓ to 3½ cu. yds. Now available with torque convertor power, the Slackline is increasing its production over 25%.

Bucket automatically discharges onto a 60-ft. high cone pile. Mast in foreground rises 90 ft.

The best Sauerman Machine for your plant is governed by the nature of the deposit, location of material, the depth and plant layout. Why not consult Sauerman engineers about your plant? Their recommendations will be based on almost fifty years of sand and gravel excavating machinery experience. Ask for Catalog A (DragScrapers) and C (Slackline Cableways).

SAUERMAN BROS. INC. 634 SOUTH 28TH AVENUE • BELLWOOD, ILLINOIS

CRESCENT SCRAPERS • SLACKLINE and TAUTLINE CABLEWAYS • DUROLITE BLOCKS

"In plant" service records prove

For Centrifugal Collection of Kiln Dust...

NOTHING EQUALS THE 24 IH MULTICLONE

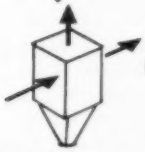
That's a big statement—

but the proof behind it is even more impressive

The 24 IH has over 7 years of actual plant service behind it—not just one or two installations, but in a wide range of cement plants in all parts of North America with many types of kiln dust collection problems. In one application after another the 24 IH Multiclone Collector has proven to be:

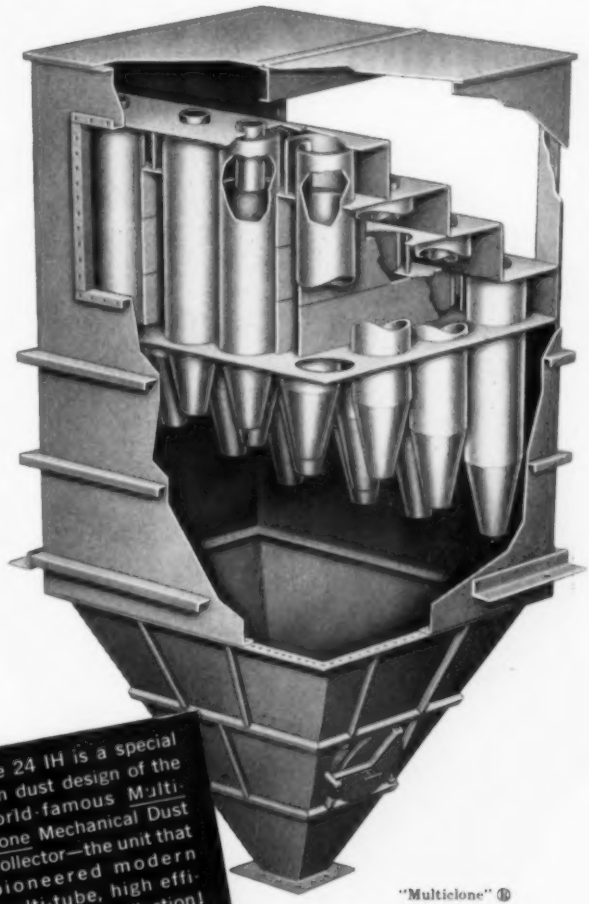
▶ the most efficient of any mechanical equipment for kiln dust collection because of its high speed centrifugal cleaning action!

▶ the most trouble-free of any unit, because its straight "in line" flow design and large diameter tubes prevent clogging and costly down time for servicing!



▶ the easiest to install because its simple cubic design fits new or existing plant layouts!

In addition, convenient rodding holes can be installed in cover and inlet panel to simplify tube cleaning while the unit is in service...and where high sulfate conditions exist, removable outlet tubes can be supplied to cut maintenance costs.



"Multiclone" ®

The 24 IH is a special kiln dust design of the world-famous Multiclone Mechanical Dust Collector—the unit that pioneered modern multi-tube, high efficiency dust collection!

The 24 IH MULTICLONE will give you completely new standards of performance—higher efficiency, lower maintenance, longer life, and maximum adaptability to *your particular* operating requirements!

Our representatives will gladly supply complete details. Or write direct.

COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Jet-Cleaned Filters
HOLO-FLITE Processors
HI-TURBIANT Heaters

WESTERN
PRECIPITATION
CORPORATION

Engineers and Constructors of Equipment for Collection of Suspended Material from Gases . . . and Equipment for the Process Industries

LOS ANGELES 54 • NEW YORK 17 • CHICAGO 2 • PITTSBURGH 22 • ATLANTA 5 • SAN FRANCISCO 4

Representatives in all principal cities

Precipitation Company of Canada Ltd., Dominion Square Bldg., Montreal

inside story of a longer grind

Moly-Cop is hard and tough to the core...

A look inside this Moly-Cop ball shows a uniform, fine grain structure extending to the core. It is the result of special alloying, forging and heat treating that provides a hardness and toughness best suited to grinding needs. This is why you can expect a long, economical grind from Moly-Cop balls. It's the big reason why *Moly-Cop* balls have become the *STANDARD OF COMPARISON AROUND THE WORLD.*

SHEFFIELD

ARMCO®

MOLY-COP

TRADE MARK

COPPER-MOLYBDENUM-ALLOY

Grinding Balls

SHEFFIELD DIVISION

ARMCO STEEL CORPORATION

SHEFFIELD PLANTS: HOUSTON • KANSAS CITY • TULSA

EXPORT REPRESENTATIVES, THE ARMCO INTERNATIONAL CORPORATION, MIDDLETOWN, OHIO

See How Much This User Saved on a Typical Operation:

If loaded with all dynamite, cost would have been:

4210#	Dynamite (Main & deck charge)	$829.33
1600′	Primacord	$ 50.32
20	M.S. Connectors	$ 10.51
	Total	$890.16

Actual cost with Spencer Prilled Ammonium Nitrate:

1002#	Dynamite (Primer & deck charge)	$214.88
3290#	Ammonium Nitrate	$119.09
40 gals.	#2 Diesel fuel	$ 5.20
1600′	Primacord	$ 50.32
20	M.S. Connectors	$ 10.51
	Total	$400.00

SAVINGS ON 21 HOLES — 55% or $490.16

Compare these actual costs for a typical 21-hole blasting operation, as reported by a midwestern cement company to Spencer Chemical Company, makers of Spencer Prilled Ammonium Nitrate. Present delivered cost of Spencer Prilled Ammonium Nitrate is about 20% that of the high velocity dynamites.

How This User Saved 55% On The Cost of Blasting 21 Holes

Use of Spencer Prilled Ammonium Nitrate for Blasting Cuts Charges on Materials, Shipping, Storage

"We saved 55% on this typical operation, using Spencer Prilled Ammonium Nitrate in place of conventional rock blasting mixtures!" That's the report of the general manager of a midwestern cement company.

It's safer and more convenient to use Spencer Prilled Ammonium Nitrate, too. That's because prilled ammonium nitrate is *non-explosive before mixed*, and can therefore be shipped or stored with other inert packaged goods.

Spencer's intensive tests using prilled ammonium nitrate include primary open-cut blasting for coal, iron, and rock. In fact, Spencer Chemical Company is prepared to offer you the latest and most complete available data about almost every open-cut blasting situation in this hemisphere.

It costs you nothing to get the full benefits of Spencer's accumulated knowledge and experience in this field. Find out for yourself about this cost-cutting new blasting process. Spencer's special bulletin, "Cut Blasting Costs with Spencer Prilled Ammonium Nitrate," and the most expert technical advice in the country are yours for the asking. Mail the coupon—today!

SPENCER®

MAIL THIS COUPON:

Spencer Chemical Company
Sales Supervisor,
Industrial Ammonium Nitrate
402 Dwight Building
Kansas City 5, Missouri

☐ Please send me free Spencer bulletin, "Cut Your Blasting Costs with Spencer Prilled Ammonium Nitrate."

☐ Please have a Spencer Technical Service Representative call—without cost or obligation to me.

Name_____

Company_____

Address_____

Post Office_____ State_____

GARDNER-DENVER "AIR TRAC" DEMONSTRATION IN PRINT

DRILLING TIME CUT 71%

AIR CONSUMPTION CUT 60%

THERE ARE 29 GARDNER-DENVER DEMONSTRATION POINTS IN THE CONSTRUCTION FIELD

Contact Gardner-Denver and arrange for a demonstration of Gardner-Denver drilling equipment in your quarry. Write today.

DRILLING LABOR COSTS CUT 59%

POWDER COSTS CUT 29%

Quarry: Shelbina Quarry of HALL & RILEY QUARRIES and CONSTRUCTION COMPANY, Boonville, Missouri

Formation: Burlington formation . . . fitchery with flint seams . . . hard to break

Equipment: One Gardner-Denver deluxe "Air Trac"® • One DH123 deep hole drill • Ring seal shank • Sectional drill rods • Couplings • 2¾" carbide bits

Plan for Demonstration: 7′ x 10′ spacing • 24′ hole depth • Number of holes—36 • Tons in shot—4500 • Holes loaded with 60% dynamite below water level and ammonium nitrate above

HERE'S A DETAILED REPORT ON DEMONSTRATED SAVINGS

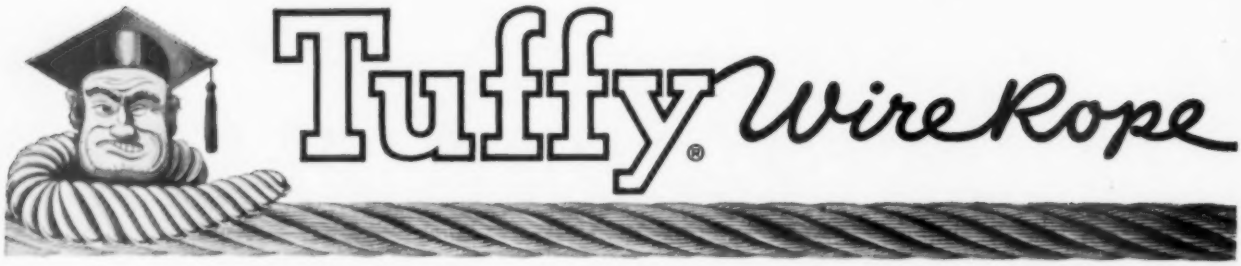
	"AIR TRAC" DEMONSTRATION	WAGON DRILLS FORMERLY USED	SAVINGS
Tons in shot	4500	4500	
Number of drills	1	2	1
Spacing	7′ x 10′	4′ x 7′	
Hole size	2¾"	2¼"	
Tons per foot	5.4	2.16	
Number of holes required	36	90	54
Lineal feet drilled	864	2160	1296
Time required to drill out	10½ hrs.	18 hrs. each drill	25½ hrs.
Pounds of explosives	1675	1800	
Cost per pound	15.6¢	20.5¢	4.9¢
Ton of rock per pound	2.7	2.5	
Cost explosive per ton	5.8	8.2	2.4
Powder cost	$262.62	$369.00	$108.00
Drillers required	1	2	1
Drill labor cost	$15.75	$38.25	$22.50
Compressor hours	10½	18	7½
Average air consumption per foot of hole	200 cfm.	200 cfm.	
Total air used	172,800 cu. ft.	432,000 cu. ft.	259,200 cu. ft.
Full load time on compressor	4.8 hrs.	12 hrs.	7.2 hrs.
Compressor fuel consumption (based on 10 gal. per hr.)	48 gal.	120 gal.	72 gal.
Fuel savings on 4500 tons			$10.80

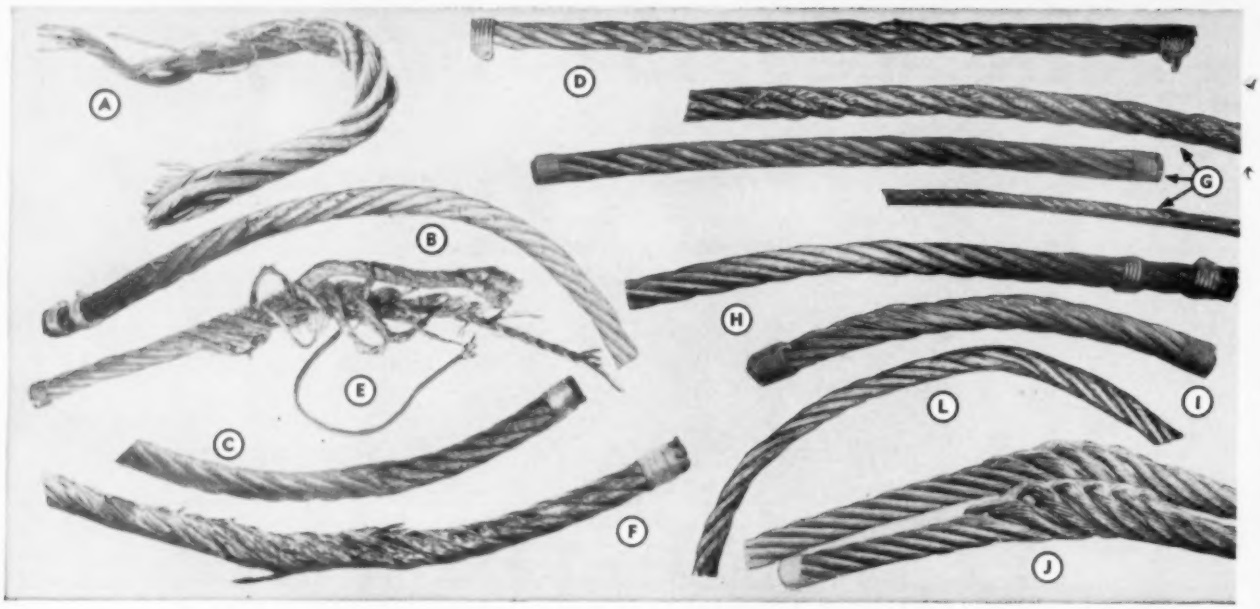
ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER - DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario





Guard Against these Cripplers and Killers of Wire Rope

Pictured above are some of the results of wire rope abuses. They quickly ruin wire rope efficiency or end rope life abruptly, long before you have had the service you paid for. Even the best wire rope is a sitting duck for these enemies. When you avoid or minimize them, you make real gains in longer rope life, better service and greater economy. Remember, your Tuffy distributor will be glad to work with you against these and other wire rope hazards.

Here are the "case histories" of the untimely wire-rope fatalities and injuries shown in the picture:

A. Mangled in a wedge socket: Here's a result of improper socketing. It was caused by using a poorly designed or worn-out wedge socket. Failure at the dead end can damage other sections of the rope, too.

B. Rusty road to ruin: Rust—No. 1 enemy of steel—takes a heavy toll in wire rope life. An insidious, silent type of killer, rust often does irreparable damage before it's even noticed. The one-strand break shown here resulted when the rope was allowed to become rustbound through lack of lubrication. Tests show that, with other conditions ideal, properly lubricated rope has up to 10 times the life expectancy of dry rope.

C. The crushing blow: The Sunday punch for this piece of wire rope was delivered by a tractor cleat—just one of many crushing injuries caused by rope being run over or banged into by hard, sharp objects. Even the toughest wire rope is no match for this kind of mistreatment.

D. Strangled by a misfit: When the bearing surface of a sheave is too small for the rope diameter, pinching action quickly destroys the rope — especially when it's overloaded. The victim shown here was knocked out in just 1½ hours of service.

E. Apparent suicide: This rope jumped out of sheave and was soon destroyed by pulling around the shaft. Actually it was a case of sudden slack which threw the rope out of the sheave.

F. End of the line came quickly for this rope as the result of operating over a sheave that did not turn. Note the exceptionally heavy abrasion on one side of the rope. Sheaves should be checked thoroughly and often.

G. Victim of the "bends": Excessive bending of wire rope accelerates wear. Generally, more flexible ropes are used as bending stresses increase (with decrease in tread diameter of sheave or drum). If a rope is operated on a sheave too small for its bending characteristics, early failure is certain. Through an exhaustive series of bending tests, Union Wire Rope engineers have compiled data that you can use to assure getting the rope construction that will give you the longest service life. Ask about it.

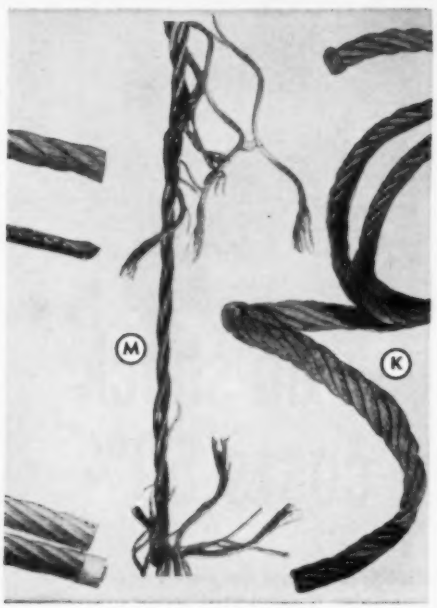
H. On the "blink" from a kink: This open kink resulted from mishandling of rope. Guard against kinks by proper winding on the drum. Never pull a loop smaller. Always enlarge it, then straighten out the rope.

I.-L. Crushed and worn from "beatings on the drum": Even under normal operating conditions, drum wear gives wire rope severe punishment. This wear concentrates at the cross-over points and at the flange. Excessive drum crushing results from operating on small drums, excessive loading and poor winding. Smooth drums are not recommended. Here are typical "drum beatings":

I. Cross-over wear.
J. Cross-over crushing on drum.
K. Drum crushing from poor winding.
L. Drum-crushing from small drum.

Although drum wear cannot be eliminated, its effects can be greatly reduced. Under properly engineered procedures, two and three times the service can be obtained from the same line by improving drum conditions. Union Wire Rope engineers will help you with this problem. Get in touch with us for more information. 58-1

Tips



M. Overloaded — soon exploded: The rated capacity of a wire rope is based on the breaking strength (catalog) divided by a safety factor applicable to the type of service or use. The grade of steel, type of construction and size of the rope determine tensile strength. It must be properly related to the loads it will carry, or costly and dangerous early failures are likely to occur.

How Your Tuffy Distributor Can Help You Save Money

Condition of equipment is a big factor in longer rope life and greater economy. Your Tuffy distributor will help you check your equipment and operating conditions to make sure everything is in your favor for getting greatest service from your wire rope. Get in touch with him. And ask him to put your name on his mailing list for FREE Tuffy Educational Bulletins.

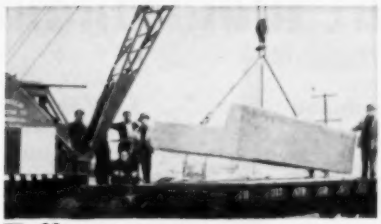
Be Sure You Use BALANCED Wire Rope

You hear a lot about extra strength in wire rope. There is no trick to designing wire rope with very high strength. But — there is nothing to be gained if high strength is put in to the exclusion or subordination of other qualities that are just as important as excessive strength.

For example: the life of a dragline depends on its resistance to abrasion. When it breaks, as a result of continued exceptionally hard digging in abrasive materials, the owner finds maintenance cost of the dragline increasing. Hard-drawn rope tends to act as a spring. As wear progresses, it arches over the crown of the strand. Repeated flexing of this too-strong arched wire causes early failure. So the drag rope must meet a condition where strength is not the major factor in resisting abrasion.

Every one of the Tuffy Special Purpose Ropes has a different ratio of strength to other properties necessary for longest life, most efficient operation and lowest maintenance expense. Your Union Wire Rope distributor has the BALANCED rope for every application.

Tuffy Special-Purpose Ropes are tailored & BALANCED for special uses



Tuffy BALANCED Slings & Hoist Lines

Top-performing team in every type of materials handling. Tuffy Slings are made of a patented, machine-braided fabric; stays extra flexible, can't be seriously hurt by knotting or kinking. Tuffy Hoist Line is a special construction of super flexibility and toughness.

Tuffy BALANCED Scraper Rope

It's flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Moves more yardage per foot because it's specially built and balanced to take the beating of drum-crushing abuse.

Tuffy BALANCED Dozer Rope

Built to give you longer service with less downtime. 150' reels of 1/2" or 9/16" mounted on your dozers allow you to cut off worn sections without wasting good rope. Put Tuffy Dozer Rope on the job and watch costs go down!

Tuffy BALANCED Dragline Rope

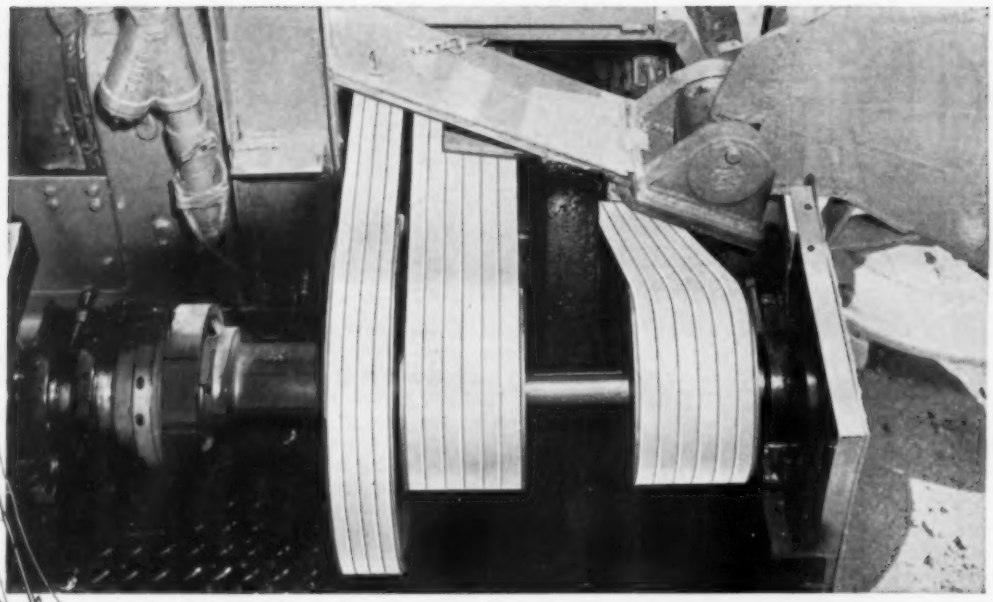
Made to give you maximum abrasive resistance with super flexibility. Rides smoothly on grooves; hugs the drum when casting for full load. Consistently dependable in handling any material — wet or dry dirt, sand, gravel, rock, cement or minerals.

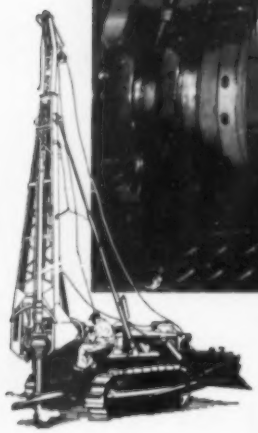
union Wire Rope corp.

SUBSIDIARY RMC STEEL CORPORATION

2132 Manchester Ave. Kansas City 26, Mo.

Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand.

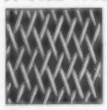




Super V-Belts soak up shock ...cut maintenance costs 50%

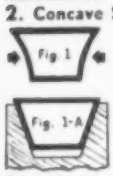
No other V-Belt has ALL these advantages

1. Flex-Weave Cover (U. S. Pat. 2519590)



A Gates exclusive: provides greater flexibility . . . prolongs belt life . . . helps deliver more power to driven machine.

2. Concave Sidewalls (U. S. Pat. 1813698)



Note the concave sides shown in Fig. 1. As belt bends, concave sides become straight, making uniform contact with sheave groove (Fig. 1-A). Even contact means uniform wear . . . far longer belt life.

3. Tough, resilient Tensile Cords

Super strong and resilient; provide 40% greater horsepower capacity . . . easily absorb heavy shock loads . . . reduce number of belts required, save weight and space.

4. High Electrical Conductivity

Built into Gates Super Vulco Ropes for safer drives (in explosive atmosphere).

5. Oil, Heat, Weather Resistant

Made with special rubber compounds, Super Vulco Ropes stand up longer under all conditions.

ESPECIALLY DESIGNED to handle the heaviest shock loads, Gates Super Vulco Ropes insure lower replacement and lower maintenance costs.

For example: Sordoni Construction Co., Inc., Forty-Fort, Pa., had frequent trouble with the drive on their heavy-duty hole-digger and pole-setter when installing big 80-foot powerline poles.

Lambert Swingle, shop superintendent, and the nearby Gates Field Engineer designed the drive for the equipment shown here. Mr. Swingle says: "The Gates Super Vulco Rope Drive has been working perfectly since 1956, cutting maintenance costs 50%. Without Gates Ropes, we'd be down most of the time."

A wealth of drive data is quickly available to you. Simply call your nearby Gates distributor for a Gates V-Belt specialist. Stocks carried in industrial centers around the world.

The Gates Rubber Company
Denver, Colorado
World's Largest Maker of V-Belts

Gates

Gates Super VULCO ROPE Drives

40% more Horsepower Capacity

TPA 814

"EXTREMELY WELL CONSTRUCTED" says operator Herschel Buck (left) about this American Shovel. ". . . Its air controls are grouped for very easy operation." In addition to loading limestone, this versatile shovel is used to strip 18 to 22 feet of overburden and handle a drop ball to break up rocks too large for the crusher.

AMERICAN 1½ YARD SHOVEL DIGS 1000 TONS OF LIMESTONE DAILY

Limestone for roads, asphalt mix and agricultural use are produced in quantities up to 1000 tons per day at the Rockford Stone Company. After each shot, Rockford's big American 700 Series Shovel moves in quickly and loads trucks feeding the primary crusher. Even at such high production rates, the American Shovel has enough free time to perform other important jobs.

Manager of the Rockford, Ohio firm, William E. Beerbower says "The American is a well built machine—it has easy access to operating parts for maintenance or repair. These are two of the main reasons why we decided on American." He reports both operating and maintenance costs "at a minimum"!

Only tough rock work can prove shovel durability! Hundreds of hours of trouble-free, low cost operation on jobs like this positively prove that the rugged 700 Series Excavators and Cranes stand up longer—take the abuse and do more work too! Americans are engineered and manufactured to produce more at lower cost and keep your profits up. Call your American Distributor for all the facts on the complete line of American Cranes and Excavators—there's a size, a front, exactly right for your job!

EXCAVATORS-CRANES to 2 yds.-50 tons
LOCOMOTIVE CRANES to 130 tons
DERRICKS-HOISTS to 800 tons
REVOLVER CRANES to 400 tons

AMERICAN HOIST
and Derrick Company
St. Paul 7, Minnesota

AMERICAN HOIST PACIFIC COMPANY
· Special materials handling equipment

CROSBY-LAUGHLIN DIVISION
Drop forged fittings for wire rope-chain

Keep Haul Units Humping

No Loading Bottlenecks with Dependable MANITOWOC Performance!

When there's a Manitowoc in your pit, trucks keep moving . . . production never slows down. That's because dependable, bonus-capacity Manitowocs take bigger bites, deliver bigger payloads. And rugged simplicity of design keeps output steady under the toughest digging conditions. Here are some of the outstanding Manitowoc features that pay off in *any* pit operation . . .

Faster Cycle Speed . . . Manitowoc's simplicity of design provides a minimum number of gears and pinions with only working gears turning to make full use of all available horsepower . . . the exclusive "powerflow" slide pinion arrangement uses only one set of clutches to drive, travel, swing and boom hoist. Balanced working speeds keep power at the dipper.

Rugged Construction . . . From the wide, self-cleaning, box-type treads, right up to the extra-strong, internally reinforced boom and dipper sticks, Manitowocs are engineered to tackle tough rock duty. Every component is built to take the steady pounding of rock digging.

More Power and Stamina . . . Manitowoc adds power by saving power . . . the full power flow is directed only to the operating function. That's why Manitowocs dig faster and longer without downtime . . . that's why they outperform any other shovel in their class.

Full Range of Models . . . to fit any pit or quarry operation; all quickly converted to dragline or clamshell use. Get more profit-filled information on the full line of Manitowoc shovels . . . call your distributor now!

Manitowoc

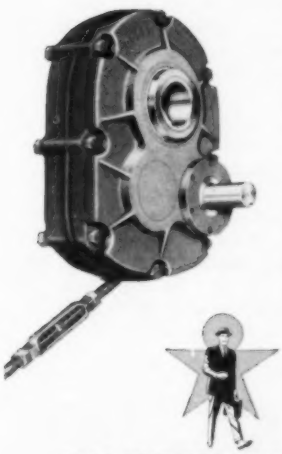
MANITOWOC ENGINEERING CORP.

MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
20 TON - 100 TON	1-YD. - 5½-YD.	1-YD. - 6-YD.	1-YD. - 2½-YD.

THERE'S QUALITY IN TORQUE-ARM

...AMERICA'S MOST WIDELY USED SHAFT-MOUNTED SPEED REDUCER



Extreme ruggedness and top quality are built into every detail of the Dodge Torque-Arm Speed Reducer—from the specially heat treated helical steel gears to the corrosion resistant semisteel housing. Broad demand has made it necessary to add sizes until today Torque-Arm is America's most complete (and most widely used) line of shaft-mounted speed reducers. Capacities range from 1 to 100 hp; output speeds from 12 to 378 rpm.

Torque-Arm is mounted on the driven shaft, in any vertical or horizontal position. It is anchored by the torque-arm fastened to any fixed object. No need for foundation, flexible coupling, sliding base. No lining up difficulties. The unit is driven through any V-belt drive. Savings up to 1/3 are possible and Torque-Arm's efficiency is high. It delivers 97% efficiency in double reduction models; and almost 99% in single!

Ask you local Dodge Distributor—or write us for bulletin.

DODGE MANUFACTURING CORPORATION
4000 Union Street, Mishawaka, Indiana

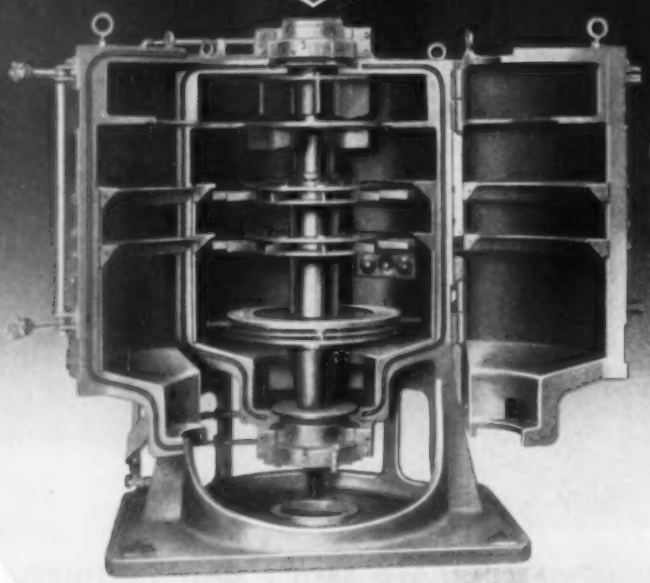
CALL THE TRANSMISSIONEER
—your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the white pages of your telephone directory for "Dodge Transmissioneer."

DODGE
of Mishawaka, Ind.

For economical production of HIGH FINENESS MATERIALS

SINGLE VERTICAL ROTOR SHAFT CARRIES FAN BLADES, SWING HAMMERS AND REVOLVING WHIZZERS

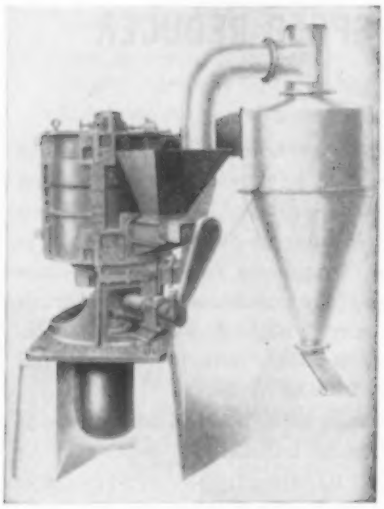
SIMPLE DESIGN: NO GIMMICKS, NO COMPLICATED ADJUSTMENTS, AND NO CLOSE CLEARANCES.



HINGED DOORS OPEN FULL WIDTH FOR COMPLETE ACCESS TO THE GRINDING CHAMBER

PRECISION CONSTRUCTION

WHIZZER SEPARATION



RAYMOND VERTICAL MILL

Quick accessibility is a main feature of design in this modern Raymond pulverizing unit. By loosening a couple of star nuts, the doors can be swung open to expose the complete interior with all working parts in a few seconds. This permits easy inspection and cleaning, or making changes from one grade to another with a minimum of downtime for set-ups.

The Vertical Mill does an efficient job of pulverizing non-abrasive products to extremely high fineness ranging from minus 325 mesh into the sub-sieve sizes. On some softer materials, the finished products may be reduced to 95% to 98% finer than 5 to 10 microns in this mill. It is equally effective in grinding tough or fibrous materials where close fineness control is required.

Exterior view of 35" Raymond Vertical Mill shown at left. Write for Bulletin No. 78 which describes the 18" and 35" Vertical Mills.

COMBUSTION ENGINEERING, INC.

Raymond Division

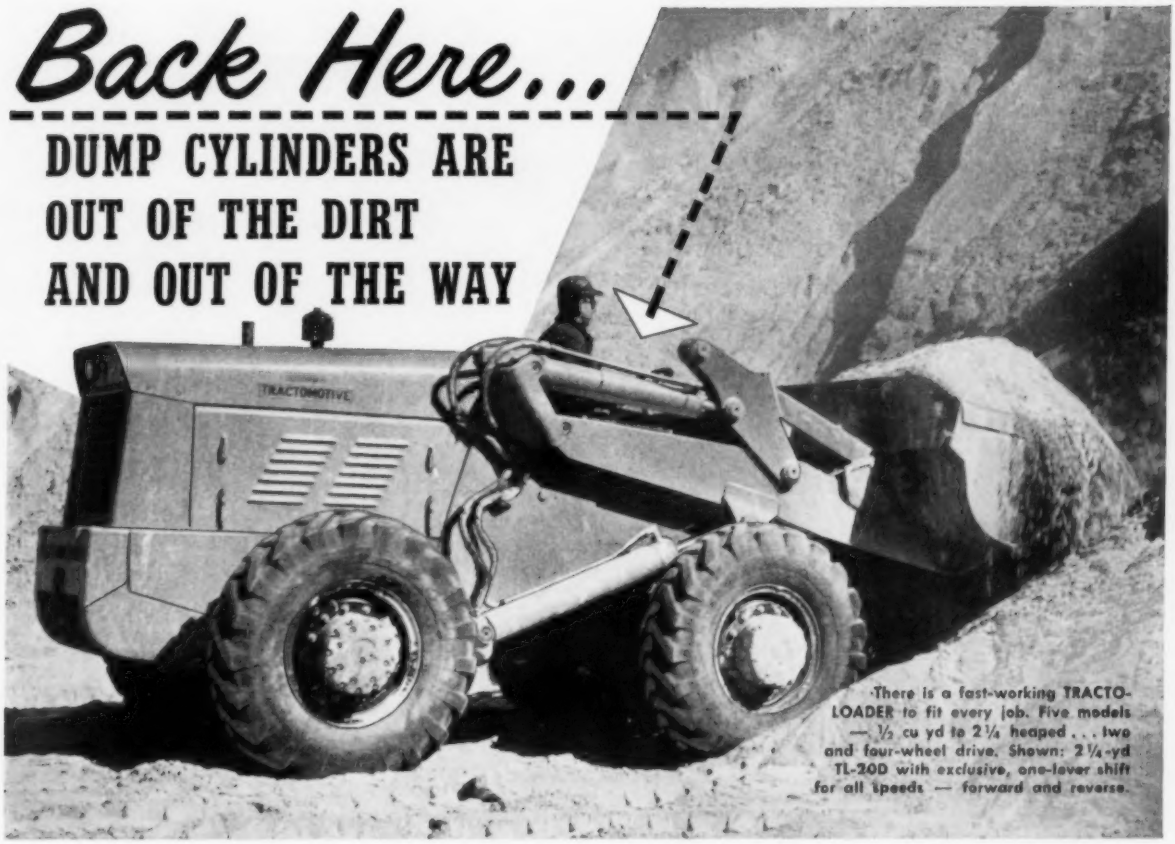
1321 North Branch St.
CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES

Combustion Engineering-Superheater Ltd., Montreal, Canada

Back Here...

DUMP CYLINDERS ARE OUT OF THE DIRT AND OUT OF THE WAY



There is a fast-working TRACTO-LOADER to fit every job. Five models — ½ cu yd to 2¼ heaped . . . two and four-wheel drive. Shown: 2¼-yd TL-20D with exclusive, one-lever shift for all speeds — forward and reverse.

Another example of Tractomotive Common Sense Design Another reason why upkeep is less on TRACTOLOADERS®

Instead of attaching dump cylinders to the bucket . . . where they are always in the thick of your work . . . Tractomotive mounts its dump cylinders up and away from the ground, well back on its TRACTO-LOADERS — out of harm's way. There is little chance of dirt, sand or other abrasives entering the hydraulic system through the dump cylinders on a TRACTOLOADER. Little chance of the cylinders or rods being damaged!

Other advantages of this out-of-the-way mounting include greater loader stability . . . no extra weight to lift with bucket . . . fewer moving parts!

Tractomotive has had this common sense design ever since it started building TRACTOLOADERS years ago . . . ever since it designed the first crawler tractor loader (over 20,000 now in use).

This design difference makes an upkeep difference . . . a performance difference—and a profit difference!

TRACTO — a sure sign of modern design

SOLD AND SERVICED BY YOUR ALLIS-CHALMERS CONSTRUCTION MACHINERY DEALER

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TRACTOMOTIVE CORPORATION • DEERFIELD, ILL.

Send For Free Descriptive Literature

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☐ Please send literature
☐ Have salesman call

Name.....
Title.....
Company.....
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City..... State.....

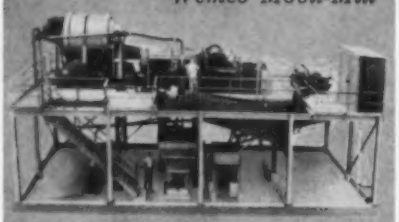
again . . . Wemco

PRODUCERS

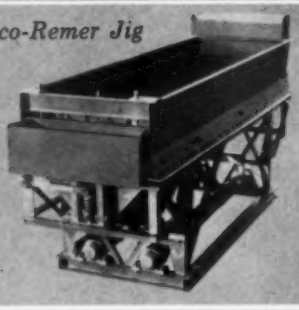
in the world of **Aggregate**

Wemco Sand Preparation Machine

Wemco Mobil-Mill



Wemco-Remer Jig



Wemco Sandclone

. . . and other complete equipment and services for aggregate production.

It's a combination geared to the progress of the aggregate industry; machines developed for more profitable high-specification production; skills paving the way for continuing improvement in application and production. Today—and in the future—depend on the men of Wemco to turn a problem into a profitable operation; look to Wemco equipment to produce the right aggregate for the need. Your questions will be answered promptly and positively—whatever the operation.

WEMCO®

Western Machinery Company
650 Fifth Street • San Francisco 7, Calif.

NEW Ford Diesel Tractors

Lowest priced diesels in their class!

Now from Ford—traditional leader in the industrial field—comes a new line of diesel tractors which will combine greater operating economies through thrifty diesel power with all the time-tested performance features of Ford's gasoline tractors! Four great new models ranging from a Special Utility Model through fully equipped models with choice of four or five speed transmissions, or an auxiliary transmission giving 12-speed mobility, and standard or "live" power take-off. All front and rear-mounted loaders, blades and other attachments fit both gasoline and diesel models of the new Ford tractor line for 1958. Get all the facts on these new Ford Diesel Tractors from your nearby dealer, or write to Tractor and Implement Division, Ford Motor Company, Birmingham, Michigan.

Now! Many Ford tractor models with gasoline, LP-gas and diesel engines

YOU SEE MORE FORDS BECAUSE THEY SAVE MORE MONEY!

HANDLE ALL THESE JOBS AND MANY MORE... AT LESS COST!

All New and Great for '58

HENRY

700 AND 800 TRACTOR SHOVELS WITH SELF-LEVELING BUCKET

- LATEST ENGINEERING DESIGN
- SOLID STEEL LIFT ARMS
- MAXIMUM PERFORMANCE UNDER HEAVY-DUTY OPERATION
- MORE BUCKET ROLLBACK
- GREATER DUMPING HEIGHT
- CONTINUOUS OPERATING PUMP
- FLOAT POSITION IN CONTROL VALVE
- BUCKET PITCH INDICATOR
- MAXIMUM DUMP ANGLE
- LARGE CAPACITY REPLACEABLE FILTER

MAKES FULL USE OF THE FULL LINE OF ATTACHMENTS

Lifting Capacity	2000 lbs.
Breakaway Capacity	3000 lbs.
Loading Height (45° dump)	8'6"
Bucket Rollback	30°
Maximum Dump Angle	58°
Cylinders:	
Lift	2½" bore, 1¾" diam. chrome rod
Bucket	2½" bore, 1½" diam. chrome rod

HENRY® MANUFACTURING COMPANY, INC. TOPEKA, KANSAS

"YOU CAN DO IT BETTER WITH A HENRY"

Enter 200-A on card, page 101

50% STRONGER

THAN COMMON SHACKLES

CROSBY-LAUGHLIN* Load-Rated SHACKLES

⅓ TO 75-TON CAPACITIES

Guaranteed capacities are offered by new Crosby-Laughlin* "Load Rated" Shackles that have their safe working load drop forged in the body. Special steels, drop forged—heat treated, plus perfect pin alignment produce quality shackles actually 50% stronger than common shackles, *size for size!* Select from a broad line of round pin, screw and safety shackles in anchor and chain styles . . . be sure you get RED fittings—symbol of *genuine* Crosby-Laughlin "Load Rated" Fittings—it's the world's most complete line. *New catalog* now available from mill supply, construction or industrial equipment distributors. Or write:

*Trademark

CROSBY-LAUGHLIN *Division*

AMERICAN HOIST & DERRICK COMPANY

FT. WAYNE 1, INDIANA

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Announcing.....

THE NEW PORTLAND CEMENT PLANT MAP

The new Portland Cement Plant Map so many of you have been waiting for is now available and ready for distribution.

It is 34 inches high by 40 inches wide and printed on sturdy 60 pound stock, making it ideal for hanging on an office wall or placing under the glass top of your desk. Each producing plant is listed alphabetically, by state and city. This list covers the plants in the United States, Canada, Mexico, Cuba and Puerto Rico. These plants are also indicated on the geographical map. Also included in the information on each plant is the plant's producing capacity at the end of 1957, and its estimated capacity at the end of 1958, if the plant is planning to expand; the process used to manufacture each plant's cement . . . wet or dry; and the brand names of the cement each plant produces. New plants under construction and grinding plants also appear in this group.

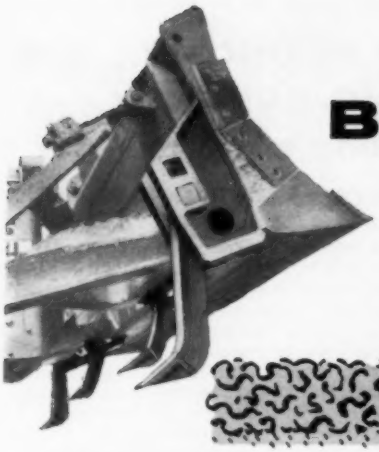
These maps may be purchased for the following quantity prices:

NUMBER OF MAPS	PRICE
1 — 10	$1.00 each
11 — 25	.75 "
over 25	.50 "

Just tell us the number of maps you want by submitting your request on your regular company letterhead. You can either send along your check or request to be billed later; either way is suitable to us.

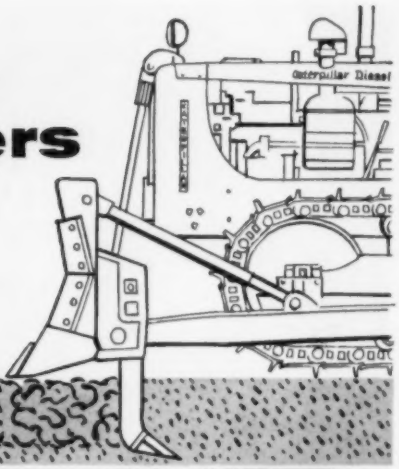
PIT & QUARRY PUBLICATIONS, INC.

431 S. Dearborn St. Chicago 5, Ill.



PRECO Back-Rippers

boost dozer production... cut costs



With the accent on reducing materials handling costs, Preco Back-Rippers are rapidly becoming "standard equipment" on bulldozers. Bulldozers can be easily equipped with low-cost, trouble-free Back-Rippers that can often cut blading costs as much as 50%, and boost production and profits an equal amount.

Preco Back-Rippers rip out rocks, roots, boulders, and scarify as the tractor backs, and automatically fold out of the way as the dozer moves forward. They are available for all sizes of bulldozers, including straight, angling and "U" blades. Have your Preco-Caterpillar Dealer give you the complete story or write Dept. 48. Preco Incorporated, 6300 E. Slauson Ave., Los Angeles 22, Calif.

PRECO BACK-RIPPERS AUTOMATIC BLADE CONTROLS

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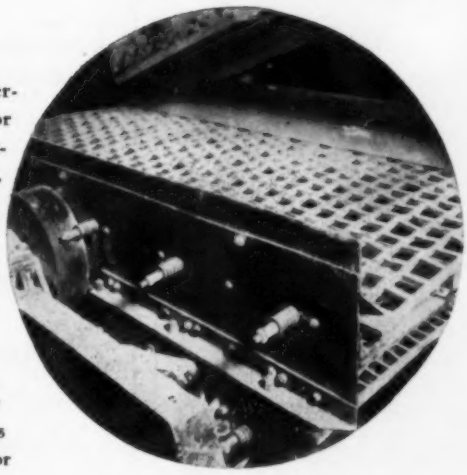
ROLLING STONE CAN'T DENT THIS PLATE!

It's made with Hendrick H Quality Steel Hendrick H Quality Perforated Plate is made from high carbon or stainless steels. High carbon can be heat-treated after perforating for a longer life. This tough steel was carefully developed by Hendrick, after many years of experience in selecting and specifying the best analyses of steel for the aggregates industry.



In addition, Hendrick H Quality Perforated Plates assures uniformity in your product. Full clearance practically eliminates blinding. You get faster deck changes for lowered labor costs. And the large, open area offers you maximum protection. Hendrick H Quality Steel Perforated Plate is available either flat, corrugated or stepped, in any desired shape and with perforations of any size. Write to find out more about this durable Perforated Plate.

Hendrick

Manufacturing Company

39 Dundaff Street • Carbondale, Pa.

Perforated Metal • Perforated Metal Screens • Wedge-Slot Screens • Hendrick Wedge Wire Screens • Architectural Grilles • Mitco Pan Steel Flooring • Shur-Site Treads • Armorgrids • Hydro Dehazers • Distillation Column Internals

Enter 201-B on card, page 101

NEW ECONOMY... with DRAVO-SCHENCK vibrating screens—feeders—conveyors

Through an exclusive agreement, Dravo Corporation is now licensed to manufacture vibro-conveyor equipment based on the original designs developed and patented by the Carl Schenck Company of Darmstadt, Germany.

Employing a unique mechanically operated "Micro Thrust" exciter unit, these units provide trouble free operation and low maintenance costs. Dravo-Schenck screens, feeders and conveyors have a wide variety of applications in the handling of ferrous and non-ferrous ores, sinter, chemicals, cement clinker, crushed stone, coal, abrasive or other difficult-to-handle material. Also available is a helical type conveyor which operates vertically in a space saving spiral and handles bulk material up to four inches in diameter.

Our engineers will confer with you on specific problems. Complete information on this equipment is available. Write for Bulletin No. 1475, Dravo Corporation, Pittsburgh 22, Penna.

DRAVO
CORPORATION

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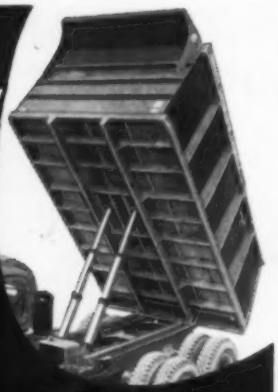
PRESS "TRIPLE TAPERED" DUMP BODY

Designed primarily for handling sand and gravel, this new Press Dump Body features a 3 taper design which allows for greater load on the front end to take advantage of strict weight laws in various states. Press quality construction assures low maintenance cost — more yardage moved at lower cost. Get the facts today on Press Dump Bodies — Write for descriptive literature.



PRESS TRAILER DUMP BODY

Designed to carry extra payload because of Press quality construction. Whatever your body requirements—you will find all of the facilities to build these bodies at Jacob Press' Sons. Before you buy your next body, write Press for quotation.

99 YEARS OF QUALITY BODY BUILDING

JACOB PRESS' SONS, inc.

SINCE 1859

3302 S. NORMAL AVE. • CHICAGO 16, ILL.

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It's Here!

BRAND NEW
LIGHTWEIGHT AGGREGATE PLANT MAP

Our newest combination map and listing is a *must* to anyone interested in the lightweight aggregate field. All lightweight aggregate plants known to be in existence are listed alphabetically, by state. In addition, the plant's address and the brand name of the lightweight aggregate it produces is given.

This combination map and listing is 25½ inches wide and 22 inches high. The sturdy paper stock it's printed on makes it ideal for framing or pasting on any flat surface.

The following are the quantity prices charged for this map.

QUANTITIES	PRICE
1 — 10 maps	35¢ each
11 — 20 "	30¢ "
over 20 "	25¢ "

We will be happy to fill your order for any number of maps you may desire.

PIT & QUARRY PUBLICATIONS, INC.
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As demonstrated at the NSGA Convention . . .

The NEW

CHARLES E. WOOD COMPANY

VIBRO - DEWATERER

Is the Greatest Advancement in Dewatering Equipment in 50 Years!

The Superior performance of Auto-Vortex Cone and Bowl Classifiers in making sharper splits, in capturing valuable fines, in removing the middle bulge, results from a life time field study of practical classifying problems.

Now, that the same practical knowledge has produced a revolutionary dewatering device . . . the Charles E. Wood VIBRO-DEWATERER

As demonstrated in scale size to hundreds of interested plant operators at the NSGA Convention, the Wood Vibro-Dewaterer launches a new era in Sand Dewatering equipment.

CHARLES E. WOOD CO.

AUTO VORTEX CLASSIFIERS

906 N. WATER ST. • MILWAUKEE 2, WIS.

WATCH FOR DATA TO BE RELEASED SOON!

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DREDGE SLEEVE CLAMPS

Sturdy • Practical • Dependable • Economical

Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U.S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply...positive in action. Write for illustrated folder, today.

THE BLACK BROTHERS CO., INC.

9th Ave. at 4th, Mendota, Illinois

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Stop Dreaming!

You can help realize your ambitions by advertising in

PIT & QUARRY'S *Broadcast Section*

BRAND NEW! - EXTRA RUGGED

BOLT & WIRE CUTTER

EXCLUSIVE: EXTENDABLE HANDLES FOR EXTRA LEVERAGE

Center cut type bolt cutter for soft or medium hard rods and bolts, alloy wire, and other metals. Cutting edge has equal bevel on each side for extra strength.

FOLDED—It fits into your pocket or tool box—safety latch locks closed when not in use. Capacities: Medium hard bolts in thread 3/8"; medium hard metals 1/2". Approximate length: 10 3/4"; extended 15 3/4".

Item #478 — A $9.95 Value — NOW ONLY $3.95 Ea. Prepaid — 2 For $7.00

FREE! 1958 HYDRAULIC CATALOG

FEATURING NEW & SURPLUS • PUMPS • VALVES • CYLINDERS • ACCUMULATORS, HOSE, GAUGES, FITTINGS • MOTORS • GENERATORS • AIR COMPRESSORS. ALL AT BARGAIN PRICES.

Immediate Delivery • Write Today.

GROBAN SUPPLY CO., Dept. PQ-4

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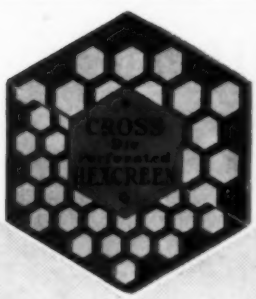
SIZING PERFORMANCE INSURED by JOB-TESTED CROSS HEXCREEN



CROSS Hexcreens are standard sizing units in plants throughout the world.

CROSS HEXCREENS are one-piece, rigid sections; designed to provide LOW Installation Cost; MAXIMUM Strength; and unmatched Sizing EFFICIENCY.

Look for this stamp on all "CROSS" Products

the Sign of PLUS QUALITY for PLUS PERFORMANCE

CROSS Perforated Steel Sections, Segments, Decks and Parts for

VIBRATING—SHAKING REVOLVING SCREENS

Services of Cross Field Engineer and Technical Data on Request.

CROSS ENGINEERING COMPANY

Established 1901

Manufacturing Plant & Offices CARBONDALE PENNSYLVANIA

Service Agencies in Principal Cities NEW YORK: 101 Park Avenue MIAMI: Dupont Plaza Center

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80% fewer pieces

in this Plibrico cooler arch nose

. . . . and wherever installed Plibrico linings are equally simple

Simplicity . . . that's the key to the durability of a Plibrico lining. That's why it's so easy to repair when needed, too. Think it over: the more complex you make anything, the greater are the possibilities of failure and the more difficult it is to repair. Plibrico lining simplicity shows itself in the clinker cooler arch nose illustrated. Here's how this Plicast formed area compares to ordinary tile construction:

Plibrico Lining	Ordinary Lining
6 pieces, steel	9 pieces, steel
10 anchors	18 support castings
1 piece refractory	58 pieces, tile
17 pieces . . . TOTAL . . .	85 pieces

Simplicity applies to all Plibrico linings. See how you can benefit from Plibrico construction by writing today for our catalog covering linings for calcining, drying, and processing furnaces.

Plibrico REFRACTORIES ENGINEERING CONSTRUCTION

PLIBRICO COMPANY • CHICAGO 14, ILL.
Plibrico Sales & Service in Principal Cities

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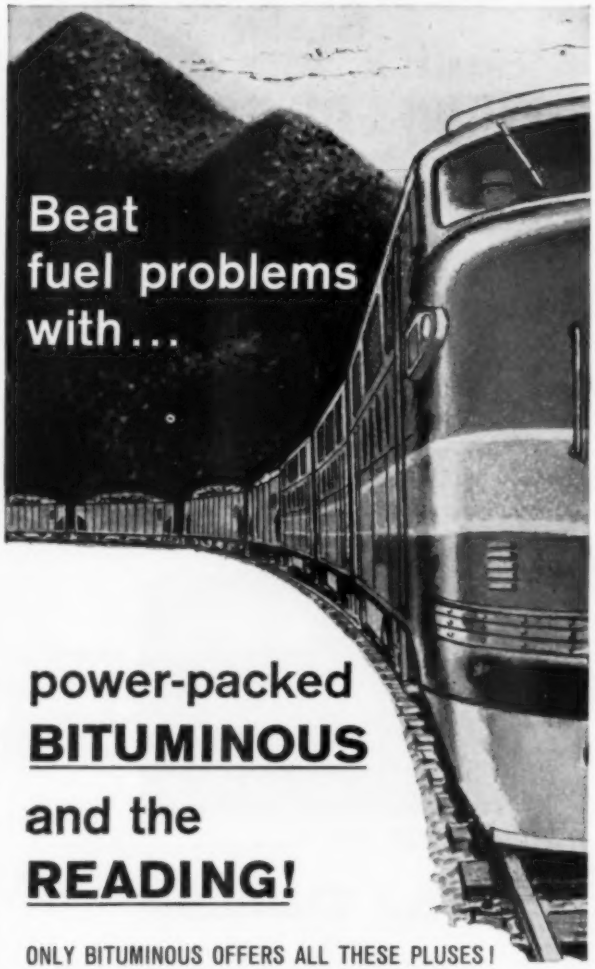


power-packed BITUMINOUS and the READING!

ONLY BITUMINOUS OFFERS ALL THESE PLUSES!

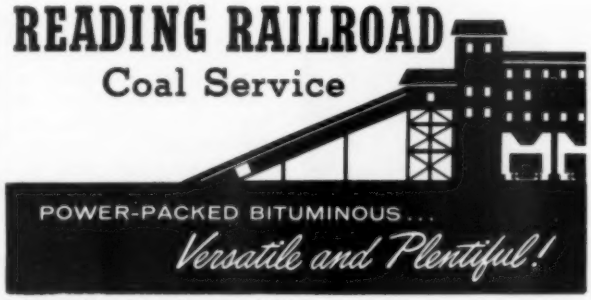
- **Coals for every firing operation.**
- **Unlimited supply for centuries to come.**
- **Economical thanks to modern mining methods.**

Don't wait until tomorrow to look at your profit picture. Discover what bituminous can do for you today. Call in a Reading representative . . . and see! More power to you!

For complete details, contact

John W. Stewart, Coal Traffic Manager, Room 517, Reading Terminal, Philadelphia 7, Pa.

READING RAILROAD
Coal Service



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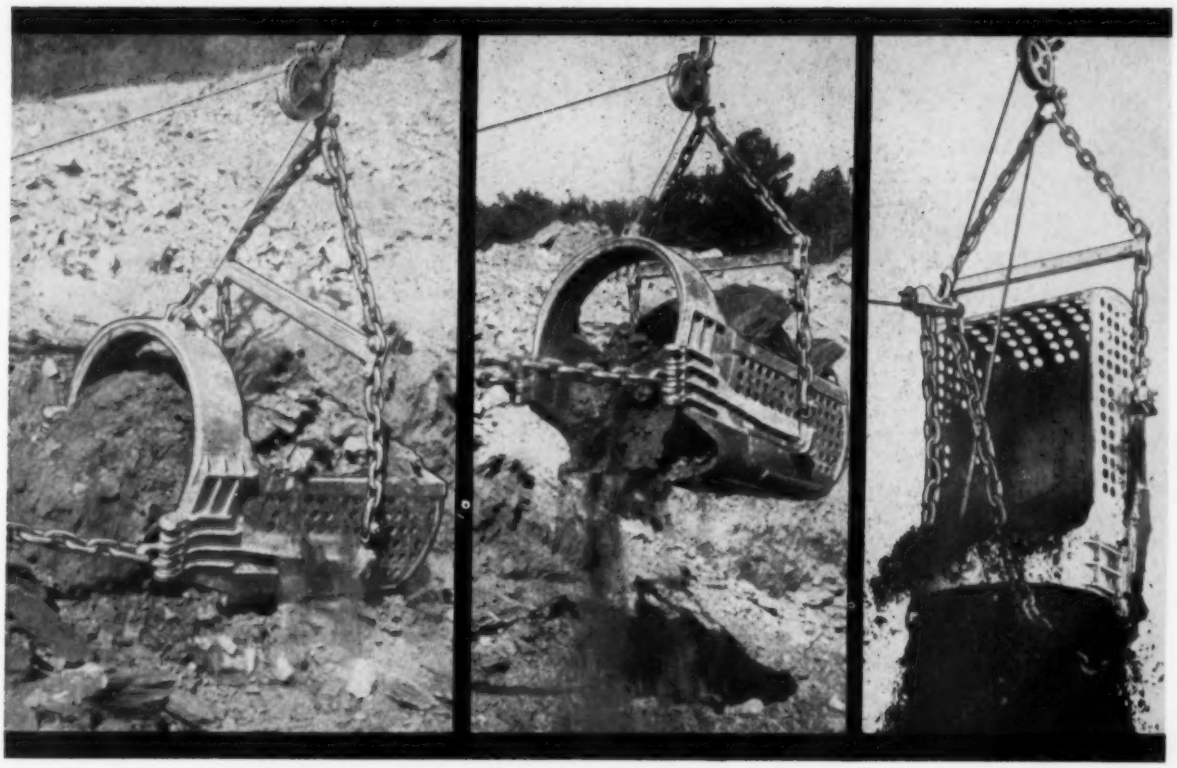
M.M.M.A.L.C.P.Y.*



HENDRIX
DRAGLINE BUCKETS

"A Type for Every Digging Purpose"...
¼ to 40 Cubic Yards-Perforated or Solid

Hendrix Lightweight Dragline Buckets

HENDRIX MANUFACTURING COMPANY, Inc.
MANSFIELD, LOUISIANA

***MOVE MORE MATERIAL AT A LOWER COST-PER-YARD**

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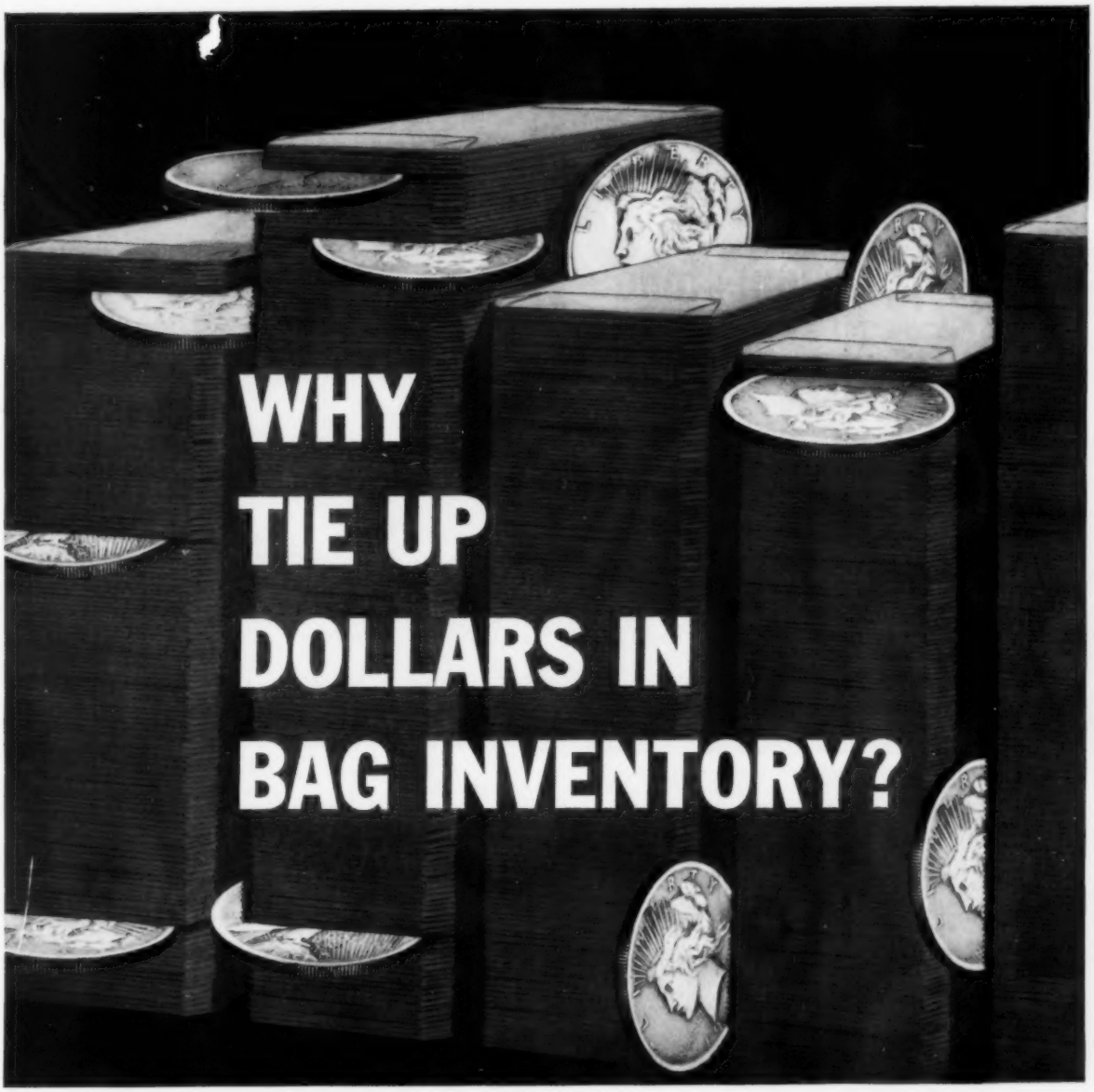
60 YEARS OF SPECIALIZATION MAKES

Moline *chain*

best by any job test

MOLINE makes just one thing—the world's finest malleable chain. The superiority of this chain has been established by 60 years of specialization. Moline engineers and technicians confine their efforts to improving design and refining manufacturing techniques—to produce chain that will give maximum efficiency . . . trouble-free performance . . . long life. And only Moline chain is triple-tested. That means Moline chains undergo rigid physical testing, visual inspection and gauging by experts. Then, after assembly, they are stressed to proof strength and shock tested for soundness. Be sure to *specify Moline Chain*, malleable or promal, for conveying, elevating and power transmission services. Write today for catalog.



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What's the secret? Our plants are strategically located with modern equipment for manufacturing all types of cement bags. Your order is processed immediately. Top quality *guaranteed* always. For less inventory, more capital, and service fast enough to meet your most urgent needs . . . call your St. Regis Multiwall representative *today!*

MULTIWALL PACKAGING DIVISION

St. Regis PAPER COMPANY

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N&W research has proved the locations of multi-million ton 97.8% pure limestone deposits

To a trained geologist, outcroppings such as these mean abundant limestone, but the scope and depth of the beds can be determined only through test drillings.

The thoroughness of N&W research is depicted by this photo. Extensive drillings were made, and cores were sent to an independent geologic laboratory for scientific testing.

Norfolk and Western plant location specialists and consulting geologists have found in *The Land of Plenty* a vast source of top-grade limestone. One location alone is estimated to contain more than 100 million tons!

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And here are typical analyses*

	DHL-1-1	DHL-1-2	DHL-1-3
SILICA ($Si O_2$)	36%	.30%	.34%
IRON OXIDE ($Fe_2 O_3$)	.072	.043	.049
ALUMINA ($Al_2 O_3$)	.21	.20	.19
LIME (CaO)	55.00	54.90	55.40
MAGNESIA (MgO)	.83	.62	.51
SULPHUR (S)	.012	.011	.015
PHOSPHORUS (P)	.006	.006	.009
IGNITION LOSS	43.20	43.50	43.20
CALCIUM CARBONATE (Calculated)	97.90	97.72	98.51
MAGNESIUM CARBONATE (Calculated)	1.36	1.30	1.07

*Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.

The minimum of dark spots in this typical test core indicates premium limestone — ideal for chemical lime, calcium carbide and other important processed materials.

Write, wire or call—

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Drawer PQ-795 (Phone Diamond 4-1451, Ext. 474)
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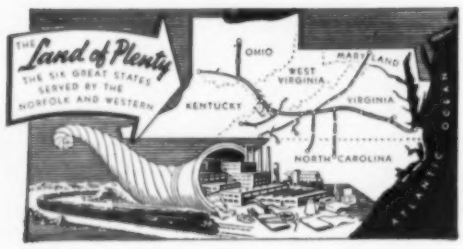
Roanoke, Virginia



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950 ft. 9", 10", 12", 14" Screw Conveyor with drives.
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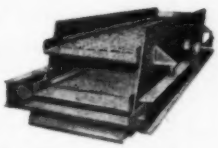
BUY WITH CONFIDENCE, OUR REFERENCES ARE: Ohio National Bank, Columbus, Ohio; Dun and Bradstreet



Model Number	No. of Decks	Screening Area	Sale Price
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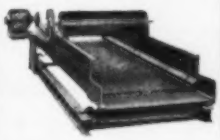

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We take our loss on our stock of short length belting. You can save as much as 50% on BONDED CONVEYOR SPECIALS, with conveyor belting in two pieces. Belt is new 4-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom cover Major grade belt and is Fresh Stock made by leading manufacturers.

A full line of accessories available, including carrying and return belt covers.

Write for Bulletin #1138.

Remember, You Save Up To 50%

CONVEYOR PRICES INCLUDE BELTING

Belt Width	Length of Conveyor	List Price	Sale Price	Add or Deduct Per Foot
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14"	50'	2222	1144	$16.84
14"	85'	3377	1733	
16"	20'	1262	636	
16"	45'	2137	1088	18.04
16"	60'	2662	1359	
16"	90'	3712	1900	
18"	25'	1477	794	
18"	45'	2217	1166	
18"	70'	3142	1648	19.24
18"	85'	3697	1933	
18"	100'	4252	2220	
18"	130'	5362	2797	
20"	25'	1517	828	
20"	60'	2882	1533	20.37
20"	75'	3467	1838	
20"	90'	4052	2145	
24"	25'	1590	898	
24"	45'	2430	1330	
24"	70'	3480	1875	21.78
24"	100'	4740	2514	
24"	120'	5580	2950	
24"	150'	6840	3603	
30"	50'	2911	1617	24.75
30"	70'	3871	2119	
30"	90'	4831	2614	
36"	25'	1818	1118	
36"	45'	2858	1678	27.95
36"	60'	3638	2096	
36"	100'	5718	3214	

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WE PAY FREIGHT ON 200 POUNDS OR OVER

Major Brand: 12# to 15# Average Friction Pull. 800# to 1000# Average Cover Tensile. Heavy Duty 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stocks.

Width	Ply	List Price Per Ft.	Sale Price Per Ft.
14"	4	$3.63	$2.53
16"	4	4.08	2.97
18"	4	4.51	3.29
20"	4	4.97	3.80
24"	4	5.85	4.26
30"	4	7.18	5.21
36"	4	8.51	6.18

Major Bee Brand: 16# to 19# Average Friction Pull. 2500# to 3000# Average Cover Tensile. Skim coat between plies. A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover. These belts are for more severe service, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal, and other similar materials, both wet and dry. Belts have molded rubber edges.

Width	Ply	List Price Per Ft.	Sale Price Per Ft.
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16"	4	4.85	3.46
18"	4	5.39	3.83
20"	4	5.90	4.37
24"	4	6.94	4.94
30"	4	8.53	6.07
36"	4	10.09	7.35
24"	5	8.14	5.78

Other widths, plies, duck weights and cover thickness available at low prices. **Write for Free Sample and Bulletin #1209.**

NEW BONDED® FEEDERS

For high tonnage and controlled feed of Aggregate, Sand, Gravel, Crushed Stone, Clay products, Metallic Ores, Coal, Cinders and almost any other bulk material to Crushers, Screens, Conveyors, Mills and other process machinery. Feeder may also be driven from tail shaft of Bonded Troughing Idler Conveyors, thus eliminating the necessity of two motors. All models available in abrasion resistant alloy steel plate. Capacities to 440 tons per hour. Write for Bulletin #1211.

Priced from $224.00

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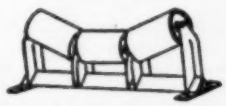

3-roll, 5" diameter Troughing Idlers for:

14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:

14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with easily replaceable prelubricated sealed ball bearings. Also can be furnished with greasable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible. Bonded Rubber Disc Impact Idlers priced from $61.00. Write For Bulletin #1138.

NEW BONDED BUCKET ELEVATORS

Open or Enclosed, Vertical or Inclined Bucket Elevators with Continuous or Spaced Buckets mounted on Chain or Belting. Bonded's 19 standard models mean lower prices and you get a Custom Built Elevator at no extra cost.

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Model No.	Bucket Size Inches	First 20' (Discharge Ht.)	Add or Deduct Per Ft.
Style "A" Spaced Malleable Buckets On Belt			
B53A	5x3½	$1099.00	$20.50
B64A	6x4	1116.50	21.25
B85A	8x5	1311.50	27.25
B106A	10x6	1692.50	33.00
B127A	12x7	1854.50	37.25
Style "E" Continuous Steel Buckets On Chain			
C85E	8x5x 7¾	$1397.00	$31.25
C126E	12x6x11¾	1599.00	34.25
C108E	10x8x11¾	1604.00	34.75
C128E	12x8x11¾	1624.00	35.50
C148E	14x8x11¾	1710.00	36.75

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Barber-Greene Model 845 Asphalt Plant, complete with gradation unit. Excellent condition. **Located Central Kentucky.** **$45,000.00**

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Eagle 24" x 25' screw	Lorain Model 41 crawler crane	Pioneer 30x200 conveyor
Adams Tandem grader	Insley K-12 & ½ yd. hoe	Pioneer 30x15 conveyor
H&B 6" pump	Michigan T-6K truck crane	Telsmith 4x10 dd screen
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36"x30' Eagle Log Washer
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6' x 60'

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H.P.	MAKE	TYPE	SPEED
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1100	*G.E.	MT	720
1000	G.E.	M-575-S	1200
1000	*West.	CW	450
600	*G.E.	M-6345-S	1800
500	G.E.	M-6345	1200
400	*G.E.	MTP-565	1200
350	*Al-Ch	ARYW	1800
300	Cr-Wh	SR-70-R	1800
250	Al-Ch	ARY-626	1800
250	*G.E.	I-M-17A	720
200	G.E.	I-M-16	600
200	*West.	CW1950A	514
150	Cr-Wh	SR-50R	1800
150	G.E.	I-M-15A	600
125	G.E.	I-M-15A	600
100	G.E.	I-E-13A	1800
100	G.E.	MT-558	720
100	G.E.	I-M-15A	425
75	West.	CW-770	1200
75	G.E.	MT-347	1200
75	G.E.	MT-356	900
75	G.E.	MT-352	720
75	G.E.	I-M-10	600
60	G.E.	MT-536	1200
60	*West.	CW-762C	900
50	*G.E.	MT-536	1200
50	Al-Ch	ARY-223	900
50	West.	CW-758	720
50	Al-Ch	ANY-26	600
40	G.E.	MT-532	1200
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75	West.	C1-756A	600

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1750	*G.E.	K	1800
1250	*Al-Ch	ANX	3600
600	West.	CS	720
600	*G.E.	K-63455	1200
500	*G.E.	K-63455	1200
500	*G.E.	I-13-E	900
350	*G.E.	KT-559-A	1800
300	*G.E.	K-6344	1200
250	*W (TE)	CS-81205	1800
250	*G.E.	KT-599-S	1800
250	*West.	CS-875-S	1800
250	Brook	RS-28	1200
200	*G.E.	FT-540	3600
200	*G.E.	I-K-13B	1800
200	West.	CSP-581-S	1800
200	Brook	RS-27	1200
200	*West.	CS-930-A	900
200	G.E.	KT-564-S	720
200	*Al-Ch	AN-37-G	720
200	*West.	CS-1010	600
200	Al-Ch	ARW-631	600
150	Cr-Wh	SC-140	3600
150	Al-Ch	AN-30-F	1200
150	West.	CSP-5815	1200
150	G.E.	I-K-15A	900
150	*West.	CS	600
125	Al-Ch	AR-226	1800
125	Cr-Wh	S-Q	1200
125	G.E.	K-558	900
100	W (TE)	CS-507-S	3600
100	G.E.	FT-542-Z	1800
100	Al-Ch (TE)	ARZ-826	1200
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Complete Quarry Plant
Capacity—200 ton per hour

Universal Jaw Crusher, Size 30" x 42", Serial W.R.B. 29507, Roller Bearing, 15 V Belts.
Universal 42" x 10'-0" Apron Feeder, chain driven by Universal Crusher, Anti Friction bearings and Conway clutch.
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30" Belt Conveyors, one—29' 2" long, & one—128' 8" long, driven by 20 H.P. Electric Motor.
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ROTARY DRYERS & KILNS: 8'x150', 9x30, 7x6, 6'x50', 4'6"x40', 4'x30', 3'x15'.
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*See also Detailed Information in 1957 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK.

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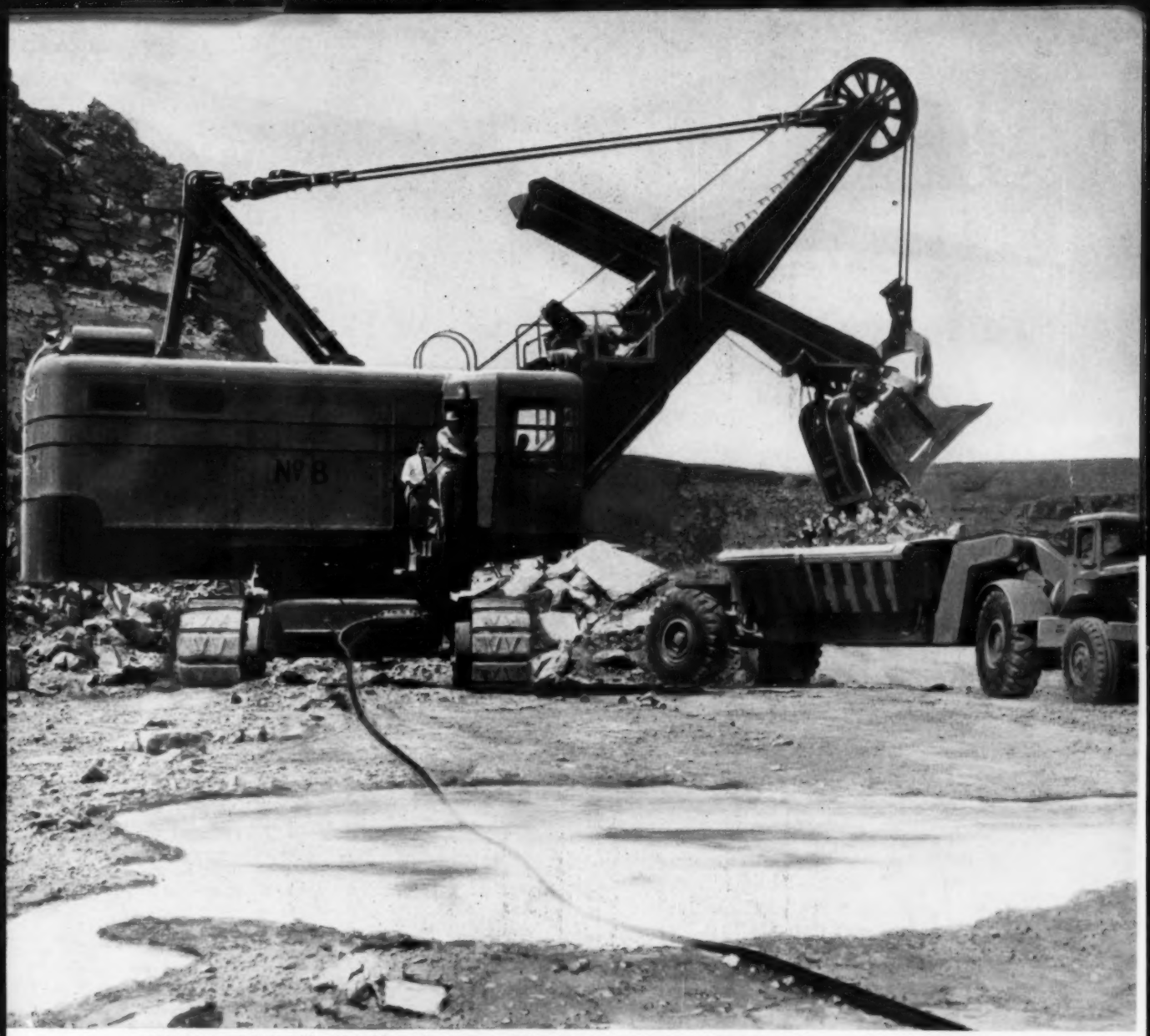
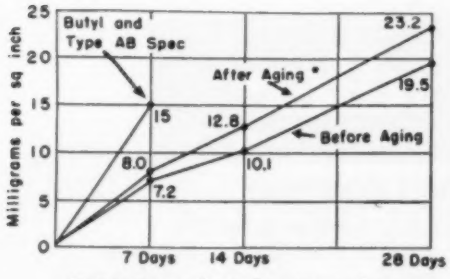


ANACONDA TYPE SH-D Shovel Cable with neoprene jacket, Type AB butyl insulation—a good companion in wet locations.

New champ in the "old swimming hole"

—Anaconda Type AB butyl-insulated Shovel Cable



RESULTS OF mechanical moisture absorption test show Type AB absorbs less than *half* the moisture Industry Specifications allow.

Where shovel cable is exposed to rain, snow or wet spots — moisture-resistant properties of the jacket *and insulation* are vitally important.

Latest test results show Anaconda Type AB butyl insulation (used in Anaconda Shovel Cable) *absorbs far less moisture* than the criterion set up by Industry Standards.

Result: longer cable life . . . greater freedom from failure . . . less down time for users of Anaconda Type AB-insulated Shovel Cable.

NEW ENGINEERING BULLETIN EB-27 has full details on performance of Anaconda butyl insulation in 15 Industry Specification tests. Ask the Man from Anaconda for your copy. And see your Anaconda distributor for your Shovel Cable. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y. 57319

SEE YOUR ANACONDA® DISTRIBUTOR FOR SHOVEL CABLE

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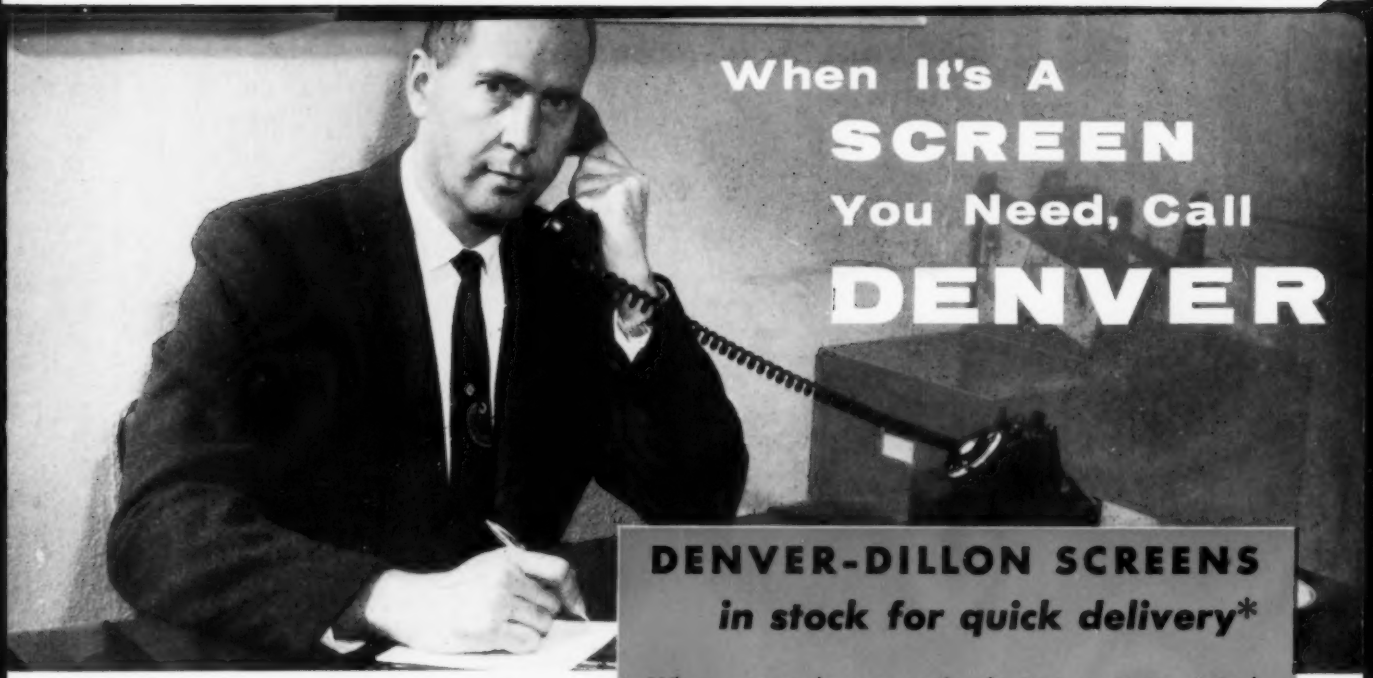

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DENVER-DILLON SCREENS *in stock for quick delivery**

When you need a screen, the shortest, most economical distance between screen problem and solution is a call to DENVER.

Here's why...

- DENVER maintains a wide range of standard vibrating screens in stock for quick delivery...in either single or double deck types, floor mounted or with suspension frames.
- DENVER offers up-to-date engineering and manufacturing facilities, modern equipment, skilled craftsmen, with years of experience in turning out rugged quality screens for fast, clean, high capacity separation.

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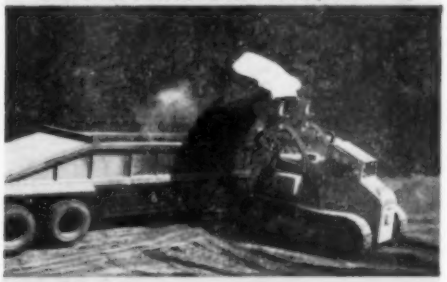
EIMCO 105 FRONT END SHOVEL

EIMCO 105 TRACTOR-DOZER

EIMCO 105 TRACTOR-EXCAVATOR (OVERHEAD)



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4. Torque converter — elimination of master clutch, gear shifting and levers.
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